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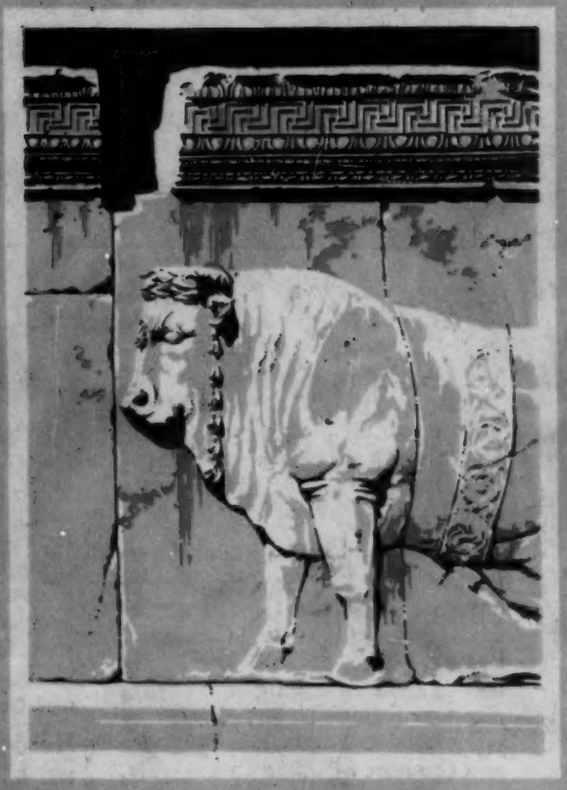

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The
ARCHITECTURAL
FORUM

VOLUME XXXVI FEBRUARY 1922 NUMBER 2

Baroque, Justice and Common Sense

PART I

By COSTEN FITZGIBBON

BAROQUE architecture is a rock upon which architectural critics split into two parties—baroquists and anti-baroquists. The ranks of the critics are swelled by those of the laity who are sensible of architectural appeal, and the battle between the camps rages sharply, with considerable intemperate language on both sides.

Some of its more ardent defenders, exulting in the "decadence and depravity" which their adversaries profess to discover as the essence of baroque style, are ever alert to justify *every* baroque manifestation whether it be really justifiable or not, and sometimes they let their zeal run away with their reason. The more numerous adherents of the opposing camp, whose attitude it is necessary just now to discuss in rather greater detail, are wont to look upon the baroque manner as a sort of "ugly duckling" in the architectural world, if they be temperate in their judgments; if they feel more strongly, they hold it wholly anathema and its very name a term of disparagement and opprobrium. It has consequently suffered more obloquy than any other

Church of Sant' Agnese, Piazza Navona, Rome, 1645-1650
Designed by Francesco Borromini

Church of San Domenico e Sisto, Rome, 1623
Designed by Vincenzo della Greca

recognized mode of architectural expression.

Mr. Ruskin is no doubt responsible for much of this hostile and often unreasoning attitude. Steeped as he was in the cult of romanticism, he led the chorus of those who poured a torrent of obloquy upon the baroque age and all its works, and was always eager to empty the vials of his vituperative rhetoric upon what he conceived to be pagan hodge-podge inspired by the devil. His influence was augmented by the charm of a fascinating literary style and by the great services he undeniably rendered in capturing attention for the art of building, enhancing the dignity and appeal of his subject, and endowing architecture with popular importance as no critic before him had done. It is unfortunate that so many people remember what he wrote in his prime and do not remember that late in life he materially revised many of his earlier sweeping judgments.

Dubbing the baroque period the "grotesque renaissance," and writing of a carving upon a church, Mr. Ruskin says:

"In that head is embodied the type of the evil spirit to which Venice was abandoned in the fourth period of her decline, and it is well that we should see and feel the full horror of it on this spot, and know what pestilence it was that came and breathed upon her beauty and melted it away." Again, after paying tribute to the impressiveness of Santa Maria della Salute "by its position, size and general proportions," he observes that "the proportions of buildings have nothing whatever to do with the style or general merits of their architecture. An architect trained in the worst schools and utterly devoid of all meaning or purpose in his work may yet have such a natural gift of massing and grouping as will render all his structures effective when seen from a distance; such a gift is very general with the late Italian builders, so that many of the most contemptible edifices in the country have good style effect so long as we do not approach them."

When he can find no deeper obliquities to castigate, he discovers affectation and hypocrisy, as when he inveighs against "the ridiculous disguise of the buttresses" to the dome of Santa Maria della Salute, "under the form of colossal scrolls; the buttresses themselves being originally an hypocrisy, for the cupola is stated by Lazar to be of timber and therefore needs none." As a matter of fact, Ruskin seems to have looked upon not only the

Church of the Gesu, Rome, 1568-1575
Facade by Giacomo della Porta

baroque mode in particular, but also upon the whole "foul torrent of the renaissance" with rancorous disapproval, such as a strict theologian might display towards a pernicious heresy. In his reckoning, that way lay damnation.

Even such historians as Banister Fletcher and James Fergusson are acid in denunciation of whatever savors of the baroque "fallacy." The former dismisses the age of "anarchical reaction" with this disapproving summary:

"Sinuous frontages, broken curves in plan and elevation, and a strained originality in detail are the characteristics of the period. Columns are placed in front of pilasters, and cornices made to break round them. Broken and curved pediments, huge scrolls and twisted columns are also features of the style. In the interiors, the ornamentation is carried out to an extraordinary degree without regard to fitness or suitability, and consists of exaggerated and badly designed detail, often over-emphasized by gilding and sculptured flowers in exaggerated attitudes." According to Fergusson, Italian architecture in the seventeenth century "broke out into caprice and affectation till it became as bizarre as it was tasteless."

Now, no matter how incurably Victorian an outlook historian or critic may labor under, it is sheer folly and unworthy of a scholar to stop short at the seventeenth century in Italy and either

Church of Santa Caterina dei Funari, Rome, 1549-1563
Designed by Giacomo della Porta

Church of Santa Maria della Pace, Rome, 1655-1667
Facade by Pietro Berrettini da Cortona

wholly ignore all that comes after, or else set it aside with a brief but all-inclusive blanket condemnation as an age of unmitigated error, corruption and vitiated ideals. Surely the case of the obnoxious period is entitled at least to a hearing in court. Now and again such friendly critics as Martin Shaw Briggs or Geoffrey Scott essay a more sympathetic and rational interpretation of the baroque manner. Occasionally an "open minded" but timid minority venture to "praise with faint damns"; they really like baroque but hesitate to admit it for fear of ridicule or censure at the hands of the orthodox element of Ruskinian mental bias, but the general tide of conventional deprecation still sweeps on because too many people, instead of thinking for themselves, are content to harbor prejudiced prepossessions and to repeat the strictures they have heard or read.

Notwithstanding vehement denunciation on the part of men whose opinions are unquestionably entitled to respect, but not

necessarily to acquiescence, it is surely but mere justice to lay aside the "passions of schools," at least long enough to scrutinize facts with judicial candor; it seems but mere common sense to appraise calmly the inherent value of the baroque style, sifting the wheat from the chaff, and to note the effects it has produced upon the course of architectural history. A movement that expressed with such singular fidelity the temper of the age in which it flourished and left to posterity so prolific a record of its structural activities can neither be dismissed with a contemptuous gesture by the upholders of "settled views" nor apotheosized by an unreserved acceptance on the part of its apologists. It demands more of analysis and of detailed consideration. It is a factor to be reckoned with and its existence has the obstinacy of historic fact that refuses to be downed by such generalizations as saying that it was "the renaissance run to seed."

That the baroque architects often indulged in gross exaggerations and exuberant absurdities, nobody can deny. No sane person would attempt to defend some of their work. Nevertheless, a vast amount possesses undeniable merit and we are deeply indebted to them in more ways than one. Having noted the prevalent state of divided opinion —might we not rather call it divided *prejudice?*— it will conduce to clarity of judgment to define the general limits of the baroque age; to review briefly some of the chief exponents of the style and their most significant performances, and to call attention to the general temper of the age of which the architectural expression was a necessary outgrowth. After that, having gained some sort of substantial ground as a point of departure, we shall be in a position to judge more rationally the really essential qualities of baroque architecture and to appraise the value to ourselves of the legacy bequeathed to us by a period of prolific and dynamic activity.

Church of Santa Maria della Salute, Venice, 1631-1656
Designed by Baldassare Longhena

For the sake of convenience we may say that the baroque period began about 1550, reached its most fully characteristic manifestations in the seventeenth century, and continued well into the eighteenth. Prior to the middle of the sixteenth century there were, of course, distinct foreshadowings of what was to come—we discern them in the Villa Madama at Rome, in Michaelangelo's work, and in sundry other instances—but about the date just given the line of cleavage becomes unmistakably defined. Those who dislike arbitrary and absolute dates may be better pleased with Mr. Briggs' definition when he writes: "The baroque period dates from the times when architects began to revolt against the pedantic rules of the later renaissance school-

Interior of Santa Maria della Salute, Venice, 1631-1656
Designed by Baldassare Longhena

men, and it lasts until they tired of their untrammeled freedom and returned to their pedantry once more." The baroque movement grew out of the renaissance, and in great measure under the impulse of external contemporary conditions, and though there are many who prefer to classify it as a phase of the renaissance, the fruitage of its principles was so distinct and so intensely individual that it seems more logical to reckon it a separate episode of architectural evolution. The seeds were there—indeed they may be said to have been planted in ancient Rome—and merely awaited a favorable environment, which the sixteenth century supplied, in order to germinate.

Strictly speaking, it would be inaccurate to style Michaelangelo the first baroque architect. As a matter of fact he always disclaimed being an architect, just as he long disclaimed being a painter. Sculpture was his chosen art. It was only under pressure of continued papal importunity that he finally consented to undertake architectural labors, just as years before he had yielded only to the most urgent papal persuasion in taking up the brush for the Sistine Chapel. His method of attack plainly showed that he was not an architect, either by training or by conception, and his completed architectural productions, while embodying some elements that the baroque masters freely availed themselves of, do not exhibit certain other elements that subsequently proved essential earmarks of the baroque manner. But once he set himself to the task of architectural composition, he was too independent and self-reliant to proceed by an evolutionary adaptation of precedent. He advanced by leaps and bounds. He was a man of such dynamic daring, intellect and genius that he threw precedent to the winds and made straight toward the goal of his conception, which was often — as in the Sagrestia Nuova—a magnificent setting for sculpture.

In pursuing such a course he inevitably loosed the flood gates of license, and license in his day was at a premium, notwithstanding the creative diffidence and super-reverence for authority shown in certain quarters. As Symonds points out, Michaelangelo, essentially the genius of transition between the periods of hybrid picturesqueness and scholastic exactitude, "can neither be ascribed to the barocco architects, although he called them into being, nor yet can he be said to have arrived at the Palladian solution" of Vitruvian dogma. "He held both types within himself in embryo, arriving at a moment of profound and complicated difficulty for the practical architect; without technical education, but gifted with supreme genius, bringing the imperious instincts of a sublime creative amateur into every task appointed him. In other words, Michaelangelo's architectural

The Spanish Steps, Rome
Designed by Francesco de Sanctis, 1722-1724
Church of La Trinita de Monti, rebuilt in 1595, in background

work was coeval with the incipient impulses that blossomed into baroque; his example was destined to affect profoundly the conceptions of his contemporaries, and while not to be reckoned a baroquist, he marked the parting of the ways and was unquestionably the baroque "major prophet."

Among the outstanding masters of the baroque style, one naturally thinks first of Lorenzo Bernini, architect, sculptor, versifier, and all around craftsman, who "would design a coach or a cathedral, a costume or a group of statuary, with equal readiness"; an embodiment of the creative exuberance and facile versatility of his day; a man to whom Urban VIII said, "You were made for Rome, just as Rome was made for you," when Mazarin was trying to entice him to the French court. Like so many of the other architects of his period, he ran the gamut of good and evil in his performances. We can never forgive his vandalism in filching the bronze from the ceiling of the Pantheon to make for St. Peter's his monstrous baldachino. Neither can we withhold perennial admiration from the colonnades before St. Peter's. Francesco Borromini found it in him to perpetrate San Carlino alle Quattro Fontane, a veritable architectural jazz, and yet, five years later, he could compass the design of Sant' Agnese, whence Wren drew some of his inspiration for St. Paul's.

Giacomo della Porta has left us the facade of the Gesu in Rome and Santa Caterina dei Funari, to mention only two of his achievements; Annibale Lippi wrought the Villa Medici; Martino Longhi the Elder gave us the Palazzo Borghese and the noble front of Santa Maria in Vallicella; Domenico Fontana the Fontana Acqua Felice and the Vatican Library, among other undertakings, at the command of that most ardent baroque builder, Sixtus V; Pietro da Cortona left his individuality stamped upon the facade of Santa Maria della Pace and the dome of San Carlo al Corso. If Carlo Maderna did put the "ass's ears" on the Pantheon, he also conceived the design for the facade of St. Peter's; Vincenzo della Greca designed San Domenico e Sisto—did Gibbs know this church when he planned St. Mary-le-Strand?—and Baldassare Longhena afforded a source of perpetual delight in Santa Maria della Salute in Venice; Salvi's name is remembered by the Fountain of the Trevi; Francesco de Sanctis has contributed to the joy of thousands by his Spanish Steps, and Bartolommeo Ammannati left a legacy of surpassing beauty in the Ponte alla Santa Trinita, over the Arno.

Merely to mention the names and chief works of the rest of the representative baroque architects of Italy, to say nothing of those who won fame elsewhere, would require far more space than could possibly be given here. Regarding only the men and structures specifically alluded to in these paragraphs, it is obvious that they can be condemned without reservation only by prejudiced obscurantists who throw dust in the eyes of the laity, or by those whose minds and sympathies, steeped in timid conventionalities, are so narrow and inelastic that their judgment in this field can be of little value.

The temper of the age in Italy, and especially in Rome, was a strange complex into which, among other elements, entered the effects of Spanish influence and its tendency toward formality and ostentation; the great increase of papal and secular wealth, along with lavish spending and luxurious living; the growth of the centralized power and authority of the papacy and the augmented intellectual stimulus of humanism, together with the innate Italian spirit of experimentalism and adventure; and, by no means least of all, the richly exultant joy of living, of doing and of giving free rein to the emotions. It would have been impossible for the spiritual, intellectual and temperamental groundwork of the age to have brought forth Gothic architecture or any form other than that which it did produce.

Ponte alla Santa Trinita, Florence, 1567-1570
Rebuilt by Bartolommeo Ammannati

ITALIAN RENAISSANCE DETAILS

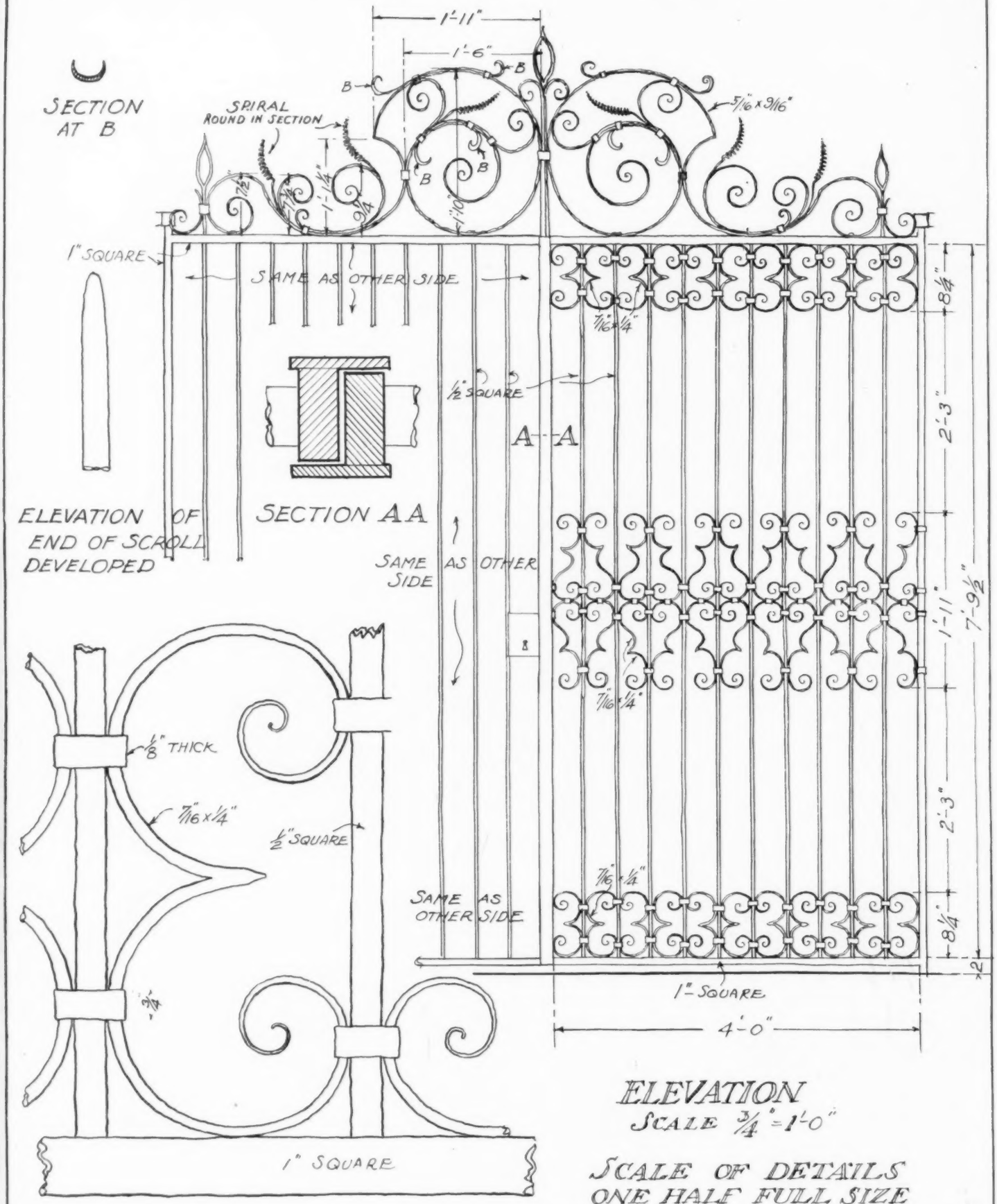
A SERIES OF MEASURED DRAWINGS

By F. NELSON BREED

WROUGHT IRON GRILLE AT COURTYARD ENTRANCE

VILLA AT ISOLA BELLA, LAKE MAGGIORE, ITALY

IN the west wing of the villa at Isola Bella there is a series of interesting wrought iron grilles. They are designed with similar motifs, adjusted to harmonize with differently proportioned openings and varying in weight to accord with their respective sizes. One can see from a glance at the unevennesses of the different parts that they were forged by hand; these slight differences in the curves and thickness of scrolls lend quality to the work. At the upper part there are some spirals, round in section, which represent tendrils.



ELEVATION
SCALE 3/4" = 1'-0"

SCALE OF DETAILS ONE HALF FULL SIZE

WROUGHT IRON GATES AT ISOLA BELLA
LAKE MAGGIORE, ITALY

MEASURED AND DRAWN BY F. N. BREED

PLASTER

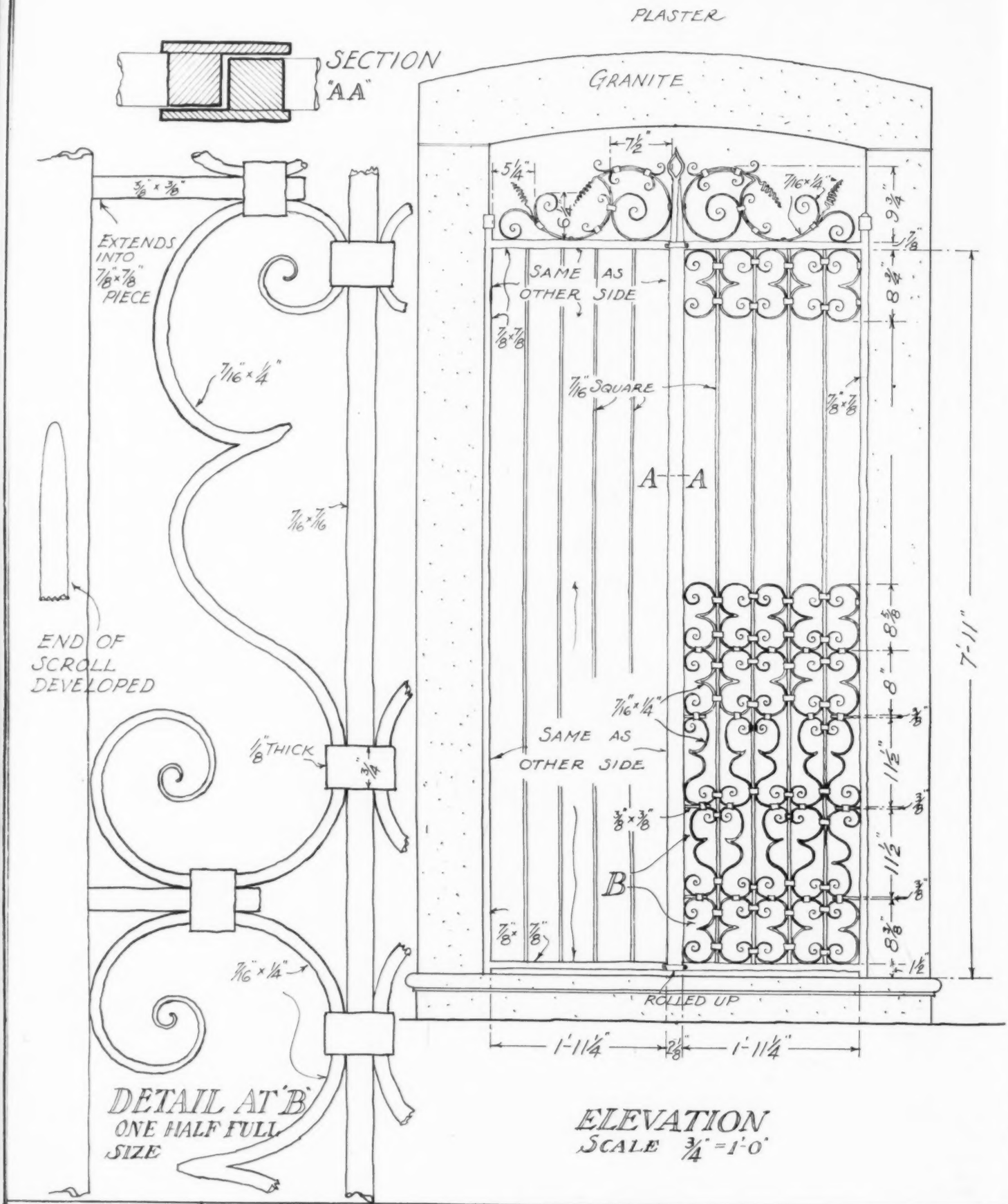
ITALIAN RENAISSANCE DETAILS

WROUGHT IRON CASEMENT DOOR GRILLE

VILLA AT ISOLA BELLA, LAKE MAGGIORE, ITALY

THE grille illustrated here is one of a series at openings which lead from a large salon to a terrace of the villa at Isola Bella, from which one looks far up the lake to the distant mountains.

The impression given by the grilles is one of delightful delicacy and grace, expressing the lightness and strength of the material of which they are made in contrast to the heavy granite trim which surrounds them. From the inside the effect is very successful, as the grilles silhouetted against the light have the appearance of lace. One does not get the effect of a formidable barrier shutting out the light and air. The delicacy of the work may be appreciated from the fact that the curl at the center of each scroll is flattened out to less than one-sixteenth inch in thickness, from which it gradually grows heavier to a maximum thickness of one-quarter inch.



WROUGHT IRON GATES AT ISOLA BELLA
LAKE MAGGIORE, ITALY.

MEASURED AND DRAWN BY F. N BREED.

ENGINEERING DEPARTMENT

Charles A. Whittemore, *Associate Editor*

Electrical Wiring Layouts for Modern Buildings

PART II

By NELSON C. ROSS
Associate Member, A.I.E.E.

IN the preceding paper we described the general methods of electrical construction in buildings, with reference to the location of panels and switchboards and the general methods of feeder control. This will apply to any modern system of wiring, whether the circuits are run exposed or are concealed in the construction of the building.

While conduit wiring is without question to be preferred to any other method of installing electrical circuits, conduit wiring is more expensive than other methods and there are several other systems of wiring in common use, each applicable to certain types of buildings, and each approved and accepted by the National Board of Fire Underwriters, if the work is properly installed.

The general types of interior wiring systems in common use are given here, it being understood that we are not considering work in power stations, or considering pressures higher than 550 volts:

Full conduit work, concealed, in which all wires are installed in iron or steel conduits, these together with steel outlet boxes, junction boxes and panel board cabinets forming a complete raceway throughout the building, this raceway being installed complete before wires are drawn in. The wires of the different circuits may be withdrawn from the conduits and replaced with new wire without disturbing the conduit system in any way, and without disturbing the plaster or finish of the building. The conduits are all concealed, either by being imbedded in the cement or masonry or installed under the floors, as in second class building construction.

As all wires are inside steel or iron conduits, with splices, fuses and live parts of the switches inside iron boxes or cabinets, the conduit system is in every way fireproof. The outlet boxes, junction boxes, and panel board cabinets, etc., are all set flush with the surfaces of the walls and finish.

Full conduit work, exposed, in which all wires are installed in steel conduits as just described, but these conduits are run exposed on the surfaces of the walls and ceilings. Panel board cabinets are of the surface type and all outlet and junction boxes and special fittings are likewise of the surface variety to insure a workmanlike installation.

Exposed conduit work is equal in every way to concealed conduits, is fully fireproof and if properly installed is not unsightly. It interferes more or less with building repairs, however, and should not be used on new buildings where it is practicable to run the conduits concealed. On mill construction and on some reinforced concrete construction, where the floor slabs will not permit the conduits to be concealed, exposed conduits must be used.

Flexible steel conduit work, concealed, in which flexible steel conduit of the Greenfield type is drawn into the building, forming a raceway for the wires as in conduit work. This flexible conduit cannot be embedded in masonry or cement, but is used in buildings of second class construction. This conduit is fitted with special terminals, permitting standard steel and iron outlet boxes to be used; it is fully fireproof and permits of being drawn or fished into the building construction after the floors and ceilings are in place. The complete raceway of flexible conduits may be installed, and the wires may be drawn in or withdrawn from the flexible conduit system at will.

Flexible armored wires, concealed, in which the wires of the circuits are wrapped with metal ribbon, generally known as "B.X." armored wire. Such armored wire cannot legally be imbedded in cement or masonry, but is generally used throughout buildings of second class construction, in frame buildings, and in the wiring of old buildings.

"B.X." work is fireproof if properly installed; it is used with special fittings and outlet boxes, and is made in sizes of Nos. 14, 12, 10 and 8 B. & S. gauge; it is also made with two, three and four conductors under one steel covering, and when used in damp places it is made up with a lead sheath covering the conductors, the armor being wrapped over the lead. When made up in this way it is known as "B.X.L." "B.X." is less expensive to install than either rigid or flexible steel conduits; it is of less weight and diameter, and can be fished where it would be impossible to install the larger pipe; its disadvantage is that the wires cannot be withdrawn or replaced without more or less injury to the building.

Exposed work, using "metal mouldings," in which steel mouldings are secured to the walls and ceilings (for branch circuits), the work being installed exposed. The moulding comes in two parts — a backing and capping; the backing is secured to the wall or ceiling surface and the capping snapped on as the wires are put in place.

As a rule, when this system is used the risers and feeder circuits are run in conduits, the branches only being run in the mouldings. Metal mouldings are flat and are not as unsightly as exposed conduits; they are not as rigid as conduits, however, and greater skill is required in their installation in order to secure a satisfactory result. A complete line of special outlet boxes and fittings is made for metal moulding work.

Exposed work, using special flat steel conduits, is installed exposed as with the use of metal mouldings; it is not installed in two pieces, however, but the wire is drawn in after the conduit is in place. It is smaller than metal moulding and if properly installed makes a fireproof and satisfactory installation. A complete line of boxes and fittings is available for this device, permitting the use of the system either as a complete installation or in conjunction with other methods of construction.

Exposed work, using wood mouldings, in which wires are installed in slotted mouldings made up of pine or whitewood, the moulding being screwed or nailed to the wall or ceiling surfaces, the wires installed in the slots and the whole covered with a wood capping, secured to the moulding by means of brads. At one time wood mouldings were in general use, and were made up for all sizes of wire; they are now seldom used excepting for short run-outs from existing outlets or for temporary wiring.

Wood mouldings must be coated with shellac before being installed, and are permitted only in places that are thoroughly dry. This type of construction is in no way fireproof and is not as durable as some form of conduit work.

Knob and tube work, concealed, in which single wires are used and the wires of the circuits tied to porcelain knobs, these in turn nailed to the studding of the building or between the beams and timbers; this work is permitted only in buildings of frame construction. Where wires pass through timbers or walls they are run through procelain tubes; joints are made in the building construction, and where tap circuits pass to the fixtures, a knob is installed at a point close to the outlet and the wire protected with tubing of the circular loom type, from the knob to a point within the fixture canopy.

Knob and tube work may only be installed in new frame buildings in districts where this type of construction is permitted under the local rules. Where installed, it is necessary to use some type of metal construction in the basement, unless the ceiling of the basement is lathed and plastered. In knob and tube work the wires are in no way protected, and are liable to injury from nails being driven through the walls and floors, either at the completion of the building or in fact at any time. The work is not fireproof and has nothing to recommend it other than the fact that it is the least expensive of any type of concealed wiring.

Concealed work, using flexible fiber tubing, in which flexible fiber tubing of the circular loom type is used and fished into the building construction as with Greenfield conduit, except that there is a separate tube used for each wire of the circuit; metal outlet boxes are used with this tubing, and the tube system is complete before the wires are drawn in. This type of work is used only in existing buildings where additions are made to the circuits; it is seldom now used for complete installations, as it is more expensive to install than armored wire. It is not fireproof nor does the fiber tube afford the same measure of protection to the wires of the circuits as the steel of the armored wire.

Exposed work, using cleat construction, in which the wires are run exposed on the surface of the walls and ceilings with wires supported by means of porcelain cleats or knobs. This type of construction is used on small installations where low first cost is of importance and where the appearance of the circuits is not considered. The wires are installed on porcelain cleats which carry the wire 1 inch from the surface of the ceiling or wall; where the wires pass through walls or floors they are protected by means of porcelain tubes. Where the circuits are not subjected to mechanical injury, the work is fairly safe.

This type of construction is also used throughout mill buildings for the running of heavy feeder circuits, the wires being insulated with a slow-burning insulation and covered with a flame-proof braid. As a rule these feeder circuits are fitted with insulated turnbuckles in each of the conductors by which the heavy wire may be drawn up and kept tight.

Information Necessary for the Preparation of Plans and Specifications

In the selection of a wiring system for any particular building one must be governed by several factors, which include the construction of the building, the requirements of the underwriters' rules, the local ordinances of the town or city in which the building is to be located and the requirements of the electric lighting and power company furnishing the service as well as the expense of the installation.

Each town or city has its local rules and ordinances covering the installation of electrical wiring, the work being either under the control of the local building department or under a special department of wires with its own inspectors. While all such requirements are based on the rules of the National Board of Fire Underwriters, many city ordinances covering the installation of wires within certain fire districts are far more rigid than the requirements of the underwriters, both with reference to the class of work installed, the location of service lines, and methods of the protection of the electrical circuits and equipment. Also, the service requirements of

the lighting and power company furnishing service to the building must be considered and provided for, so that all circuits and equipment installed will operate properly on the service provided.

If one is making a layout which includes a generating plant it is obvious that one may select the type of wiring and voltage that is desired. If, however, current is to be taken from the general service mains one must design the layout to conform to the service at hand. This does not mean that one may simply ascertain the characteristics of the current furnished by the lighting and power company, but one must know the available current at the site of the building, as while three-phase power lines may be in general use, single-phase lines only may be available at the building site, and if this is the case, power in the building may have to be operated on single-phase circuits and taken from the lines supplying the lighting service.

Before commencing the work on the plans it is advisable to visit the site of the building and determine the best location at which to bring in the service lines, also to get in touch with the building department and the inspector of wires and, if possible, to secure a copy of any local ordinance governing the installation of the electrical work. In the event of the smaller towns having no local ordinances governing the installation of electrical wiring, the work is always done in accordance with the requirements of the underwriters, or as it is generally called, the "National Code."

It is also advisable to confer with the inspector of wires and to find if there are any special requirements covering the district where the building is to be located. The inspector or his assistants will be in touch with the work during installation, and when completed they must make a final inspection and issue a permit for the installation of the meters and service. The inspectors are always ready to co-operate with the architect or engineer designing the work, and many misunderstandings, as well as expense, can be avoided by conferring with the wire department before the work on the plans is begun, and in laying out the work so that it conforms to all local requirements.

After conference with the wire inspector and ascertaining the city requirements, it is also necessary to take the matter up with the lighting and power company, and see to the "service requirements." Many wiring layouts are made without this important work being done, and the writer has known instances where switchboards and panel boards, and even motors of large capacity, have been shipped to the building, and have had to be changed at considerable expense because they could not be operated from current of the types available.

If the building under consideration were small and the power and lighting requirements not exacting, the service wire would connect to the existing feeder lines without difficulty. If on the other hand the building were a large factory or a school building in which there would be a heavy lighting and power load, the existing service lines might not be of the necessary capacity to take care of the requirements of the building, in which case it would be necessary for the company to provide new service lines from some large center of distribution to the building. It would therefore be advisable to have certain load data at hand when the matter of the service is taken up with the company.

Before taking the matter of service up with the company the writer has always found it advisable to rough over the plans and determine as nearly as is possible the approximate connected load in the proposed building. This can easily be done by checking up the number of rooms and the approximate number of lighting outlets in each room and then assuming that a lamp of a certain wattage is to be used at each outlet, doing the same with the corridors and stair halls, etc. (and with the gymnasium and assembly hall, in the event of the building under consideration being a school); then multiplying the number of lamp outlets by the wattage determined at each outlet will give the approximate total watts connected load for lighting, and this divided by 1,000 will give the approximate connected load in kilowatts. The approximate connected power load can also be obtained by determining the approximate number of motors to be used and the horsepower of each motor. Both results will be sufficiently accurate for estimating purposes.

In a city where the electrical distribution throughout the streets is underground, it is obvious that the service to the building will also be by means of an underground cable. Where, however, the company's wires are on poles, it is necessary to determine whether the wires will be carried overhead to the building or be carried to the building underground from certain poles located in the street. In small buildings the service should be carried in on low voltage and from transformers, if required, located on the street. In large buildings, however, where large transformer capacity is required, it is advisable to locate the transformers in a fireproof vault in the building and to carry the service into the building at the primary voltage of 2300 volts, rather than to locate the transformers on poles on the street.

In order that there be no misunderstanding, the information given to the lighting company should give:

1. The location of the building.
2. The type of the building and the use to which it is to be put.
3. The approximate connected lighting load.
4. The approximate number of motors to be used.
5. The approximate connected load in horsepower.
6. The point where it is desired that the service cables enter the building.

One should also request this information from the company:

1. The point of service where the company's lines will enter the building.

2. The class of service available for lighting. This will be one of these types:
   Direct current, two-wire service at 110 or 220 volts.
   Direct current, three-wire service at 110 or 220 volts.
   Alternating current, two-wire service at 110 or 220 volts.
   Alternating current, three-wire service at 110 or 220 volts.
   Alternating current, primary service at 2300 volts.
3. The class of service available for power. This will be one of the types listed here:
   Direct current, two-wire service at 110 or 220 volts.
   Direct current, two-wire service at 500 volts.
   Single-phase alternating current, two-wire service at 110 or 220 volts.
   Two-phase, three-wire service at 220 or 440 volts.
   Two-phase, four-wire service at 220 or 440 volts.
   Three-phase, three-wire service at 220 or 550 volts.
   Three-phase, four-wire service at 220 or 550 volts.
   Two-phase primary service, three- or four-wire, at 2300 volts.
   Three-phase primary service, three- or four-wire, at 2300 volts.
4. Does the company require a transformer vault in the building?
5. Will the company install underground service to the building?
6. Does the company assume the expense of the underground service?
7. Does the company furnish the service switches?
8. Does the company install the service switches?
9. Does the company furnish the transformers?
10. Does the company install the transformers and make service connections thereto?
11. Does the company provide separate power and lighting services?
12. What are the metering requirements?
13. What is the frequency of the current (number of cycles)?

All this information is required in order that the wiring plans may be completed and the specifications be properly drawn to cover the work. The information given the service company, including the load values, permits them to arrange their feeder circuits to cover the requirements of the building, while the character of the current available for lighting and power service determines the types of motors required for the building as well as the wiring circuits to motors and panel boards.

On large buildings there is little doubt but that a transformer vault will be required in the structure, and in such cases it is always advisable to carry the service wires into the building underground, from the standpoint of appearance as well as that of efficiency, as with the transformers in the building fuses can be replaced and repairs made without difficulty; while if the transformers are installed on poles, or in vaults under the street, there will be a certain delay in the replacing of fuses or in the making of repairs, particularly in the winter when the streets are covered with ice and snow.

Many of the service companies run in underground cables on large installations at their own expense, while others will do the work but require payment from the owner. Again, many service companies furnish and install the service switches and also furnish and install the transformers, making all connections to the primary sides and leaving all connections from the secondary sides to be made under the electrical contract. If this work is not done, or if service switches are not furnished by the company, the material as well as the labor must be provided for under the electrical contract, or it may be left out of the contract and taken up as an extra after the wiring of the building is completed. It is, however, necessary that the meter loops and meter boards shall be installed under the electrical contract, and in accordance with the requirements of the company, the meter loops to be left in readiness for the installation of the meters, after the work is completed. It is always advisable, where possible, to provide separate services for lighting and power, as the regulation of the voltage on alternating current lighting circuits, when these are taken off the power lines, is apt to be unsatisfactory.

On small buildings the telephone service lines are as a rule carried into the basement, underground, or to a cross-arm or bracket on the side of the building, and some protective device or connection box is installed at the point where these wires enter the building; from this point the telephone wires are run exposed and clipped to the walls or are run behind picture mouldings. On large buildings, however, it is advisable to provide a conduit system or some other method by which the wires may be extended without disfiguring the walls and finish, as the locations of the instruments are changed or new instruments added.

Before the plans are laid out, it is well to confer with the local telephone company and determine where the telephone service lines will enter the building, and whether these lines will enter underground or overhead. Also to determine as far as is possible the approximate number of telephone instruments that will be required in order that the service to the building may be properly proportioned. This also applies to the service wires of the A.D.T. system or to the wires of the city fire alarm, in the event of these services being considered for the building.

The Use of Liquid and Gas Fuels in Heating of Small Buildings

By MAURICE M. OSBORNE, M. E.

WE are all familiar with the disadvantages of coal as a fuel for the small building heating plant. It is impracticable to burn soft coal under the average small cast iron boiler, and the present cost of hard coal is great. The method of taking care of the fire does not allow of frequent attention, and even with good damper regulators the effect of this intermittent firing is felt in varying degrees of heat at the radiators throughout the day. The coal is heavy and dirty to handle and the disposal of the ashes makes it almost impossible to keep a basement clean and free from dust.

The average small boiler with inexpert attention is far from efficient, and probably less than 60 per cent of the heat value of the fuel is actually utilized. Expert attendance would improve this figure somewhat, but a constant cleaning of the flues of the boiler will be necessary and much more careful and frequent attention to the fire itself than would be practicable. Owing to the air spaces between lumps, ordinary anthracite furnace coal occupies considerable space in storage. It is dirty and noisy to put in and the labor charge for carrying it from the carts to the bins is often high.

To offset these disadvantages it was long ago proposed to burn fuels other than coal. Probably the first modern instance of this was after the discovery of natural gas in the central section of the United States. The gas at first was wasted, as it was incident to the production of oil and was merely in the way. Later, it was saved and piped through gas mains to cities and towns adjacent to the wells, where it was distributed to the houses and buildings. The gas was sold at such extremely low rates that it began to be used as a fuel for every purpose. There is no question that under these conditions of low cost no more satisfactory solution of the fuel problem could be found. The question of efficiently burning the gas was not serious. There were none of the agonies of starting a coal fire. When heat was needed, gas was simply turned on and lighted. The difficulty of obtaining a man to take care of the furnace had no bearing on the obtaining of heat.

Before long, automatic devices were perfected by which the main fire could be lighted from a distant point on the same general principle that operates a modern instantaneous hot water heater. This system had, in fact, none of the disadvantages of the coal fire system and except for the occasional danger of explosion from leaking gas pipes or from an inoperative automatic device, it was ideal. Such systems exist today and are in use in the natural gas regions of this country. The gas can be arranged to be turned on and off through the action of a thermostat, and the main burner is lighted by a small pilot light which burns continuously. The most efficient method of burning the gas is to pass it through a thick bed of rock of a refractory nature. The rock becomes incandescent under the action of heat and the gas is burned with maximum efficiency. There is no noise, smell or dirt. There is practically no soot nor any need for constant attendance.

In regions far from the natural gas fields, the only gas fuel usually available is illuminating gas. This has come into use more and more as fuel for cooking and heating service, and for hot water in dwellings, hotels and apartment houses. Its use for these purposes is legitimate, in that coal burned for heating hot water or for cooking is burned under such wasteful conditions that even at the comparatively high cost of gas its use pays, because it is used only as needed.

But, it is questionable whether it pays to burn illuminating gas under heating boilers. The only exact data known to the writer was obtained in St. Louis several years ago, where gas burners were installed under the boilers of several large residences. The results show that, not taking attendance into account, the gas cost more than coal. The houses were of such sizes that each required practically all of one man's time to take care of the heating system. This man's service was eliminated by the use of gas and in each case this elimination just about balanced the account and showed that the gas and the coal cost about the same.

There is one other application of gas for household heating which deserves mention. This is the gas-steam radiator. In this device a radiator of the ordinary type is arranged with gas burners beneath it with some provision for carrying off the burnt gas. When the burners are lighted, water with which the radiator is partly filled is turned to steam and heats the radiator in the usual way. Such an arrangement is convenient in buildings where the central system is found to be inadequate for certain rooms, or where additions are made which are difficult to reach with the original system. But it is not only more expensive to operate, but also more difficult to obtain uniform regulation in all rooms with minimum attention than a central system with one boiler and distribution piping.

It would be advisable at this point to give a comparison of the number of heat units obtainable for one dollar in the vicinity of New England, from the different kinds of fuel under discussion. If a pound of any fuel is burned, it will give off a fixed amount of heat. This heat can be measured in a

number of ways and can be expressed in British thermal units; one British thermal unit is the amount of heat required to raise one pound of water one degree Fahr. in temperature. The heat values of fuels have been accurately measured in laboratories and are published in all engineering reference books. By taking the current value of the units of fuel, as usually sold, this tabulation has been made up. For one dollar we may obtain:

Coal (anth., $14 per ton)	1,972,000	B.t.u.
Illuminating gas (14c. per 100 ft.)	428,571	"
Fuel oil (5½c. per gallon)	2,690,904	"
Kerosene (19c. per gallon)	687,388	"

Even though the gas may be burned more efficiently than the coal and is only burned when needed, it will be seen that it is questionable how much it would pay to use gas.

It has been proposed to burn heavy fuel oil in small heating installations. So far, no successful apparatus has been devised to do this and the smallest plants operating successfully on fuel oil are those which formerly burned not less than 200 tons of coal per year. The reasons for this are simple. The low priced fuel oil, though very high in heat value, is extremely thick and viscous. It does not even flow readily through a pipe unless it is heated. The mechanical difficulty of burning such small quantities of it as would correspond to a few shovelfuls of coal placed on a furnace night and morning has not yet been solved. Some experimental work has been done with burners for small boilers using a mixture of fuel oil and kerosene, the purpose of the kerosene being to make the oil more liquid and capable of passing through a nozzle in a very tiny stream. This work has not passed beyond the experimental stage. Even if it succeeds, on a dollar-and-cents basis it will not compare with coal.

A device has been perfected, and is now widely advertised and used, which burns kerosene successfully in small heating plants. This consists of a cast iron fire pot placed in the furnace instead of a grate. The fire pot is connected through a pipe to a blower set outside the furnace. Connected to the blower is a small carburetor, very much like that used on automobiles, and an automatic device which turns on the blower and the supply of fuel in accordance with the actions of a thermostat placed in one of the rooms in the building. A pilot light burns continuously in the fire pot. When heat is needed, the fuel and the blower are turned on. The atomized kerosene ignites at the pilot light and burns with a fierce flame. When the rooms of the building have been brought up to a proper temperature, the thermostat automatically turns off the blower and the fuel.

In spite of the high cost of kerosene, this automatic feature results in a considerable economy in the quantity of fuel used. The makers claim that 100 gallons of kerosene should easily do the work of one ton of anthracite coal. In an installation in Chicago, which has 750 square feet of steam radiation, 2000 gallons of kerosene were used for the heating season. In zero weather 15 gallons per day were required. In addition, there was the expense of the operation of the motor. This motor consumes about 110 watts when it is running. Even if it were run all the time it would not take more current than two ordinary 60-watt electric lamps burning continuously. As a matter of fact, the motor operates about one-half of the time in extreme cold weather, and in mild weather about one-quarter of the time. Of course there is no necessity of having a furnace man for an installation of this kind, as there are no ashes and no coal has to be shoveled.

There are on the market small kerosene heaters for preventing the freezing of automobiles in garages not provided with some regular heating system. These are nothing but small kerosene lamps provided with a wire gauze protection just like that used on miners' lamps which employ an open flame. The gauze works on a well known principle and prevents any gas from reaching the flame and being exploded. At the same time the heat and light of the flame can pass outward through the gauze. In use such devices are hung on the front of the radiator of the automobile to be heated. A sheet metal hood directs the heated air through the radiator of the car, and maintains a temperature above freezing in the radiator and around the engine.

It appears from this discussion that in the eastern states, coal is still the paramount fuel for heating small buildings, if considered from an economic point of view. Its many disadvantages are offset by its greater economy.

The whole question of fuel for any purpose is very much in the mind of the world at present. Indications are that the tendency will be to conserve the hydrocarbon fuels for internal combustion engines and for marine use, particularly with reference to their military and naval value. It is believed that the world will fall back more and more upon coal as a fuel, in that there are far greater coal reserves than petroleum reserves in sight. One new development to be expected is the use of powdered coal. Devices are now being perfected for burning this satisfactorily. It is safe to predict that as time goes on and our petroleum reserves are exhausted, we shall have discovered new methods of coal distillation which will yield us fuel oils which will do everything that the petroleum oils now do for us. We shall be able to run our motor cars, fire our marine boilers, and perhaps heat our houses with these new oils.

This is already beginning to be an accomplished fact in Germany, where under pressure of the war and lack of petroleum methods were developed in distillation of low grade coal, known as "brown coal," which are now yielding ever increasing quantities of oils of all kinds. That these methods are not impracticable is vouched for by the enormous financial backing they are receiving from the Stinnes group and other huge industrial interests.

"Building in Cocoon"

A HOUSE ON THE NORTHERN COAST OF MAINE

KILHAM, HOPKINS & GREELEY, ARCHITECTS

IT is seldom that a more difficult problem confronts an architect than to build a fireproof dwelling 30 miles from a railroad, in a part of the country where an early winter is the rule, and to have to start the work late in the fall of the year and finish it by the middle of the following June. These were the major difficulties (the minor troubles are always present) in the case that is here described. On the other hand, the location was on the coast and therefore had the facilities of water transportation for both materials and labor.

The most important point in any work, however, is to obtain the services of the best contractor possible for the kind of work to be done—one who is used to arranging beforehand for his material, and also one whose equipment both in men and machinery is most up-to-date. In this case the architects were most fortunate in having a man well fitted, in their minds, for the work. He not only had all the advantages named, but also possessed enthusiasm and interest which are quite unusual. In this instance it was necessary to have somebody who could decide, from an engineering point of view, a great many important details at the site. This was also one of the important characteristics which the contractor had.

Construction in Progress under "Cocoon" in January with Temperature below Zero

It was almost as necessary in this case to have the materials on hand at the site before winter set in as it is in a North Pole expedition. At first the rough materials were transported by schooners and unloaded on scows and towed to the shore. Later, on the first of November, a temporary but substantial wharf was built so that vessels could be brought up and unloaded onto the wagons direct. A road had to be constructed from the wharf to the building site, and a small village sprang up near the location of the house for the storage of the various materials and offices for the different trades. The men in general took over about all the boarding facilities in the small town.

In order to continue the work during the unusually cold weather of this neighborhood it was decided to build a temporary enclosure, which was filled with old window sash for light and contained a large heating plant with about one mile of steam pipes around the inside of the entire structure,

within which the building could be continued throughout the winter, and this was built large enough and high enough to complete even the slating of the roof and the building of the chimneys. This structure was of a very irregular shape, as will be noticed by the illustrations. It was made large enough to leave a sort of courtyard at the front entrance of the house to store building material to be used; when this was partly used up other material was moved in from out of doors and allowed to thaw out before it was incorporated in the building. In this way work progressed in temperature at zero and below on the outside, with perhaps 50 or more degrees of heat within. In fact it was possible for men to work in their shirt sleeves and without hats during the entire winter.

On the first of May this "cocoon" building was removed. As the work progressed at the building the supporting posts of the temporary enclosure were gradually cut off to rest on each floor as it was completed, until the posts were resting on the attic floor and some of them pierced the roof. When this temporary building was removed roofers were ready and closed these holes before night. The owner's furniture was sent by a privately chartered schooner, unloaded at the wharf and placed in the house about June 1. The house was ready and occupied by the owner by the middle of June, as originally intended.

It is believed that this record would be considered excellent even in the neighborhood of a large city, but considering its distance from the base of supplies it is remarkable. Besides the house, a large combination cow barn, horse barn and garage was built, and also several small dwelling houses which together with grading and drives completed this operation. An interesting feature, however, which was a great help in getting supplies and materials promptly, was the use of the Eastern Steamship Company's boats running from Boston and connecting with the local boats at Rockland, Maine. In this way, and with the telephone installed on the site, the foreman could telephone in the early afternoon of any day to his office in Boston for a certain shipment of material; this could usually be put on the afternoon boat at Boston and received at the site at about 10.30 the following morning. This would be considered very prompt even for an order placed for work in the immediate vicinity of a large city. A few dates and facts regarding the building progress of the work may be interesting:

August 18, sketches were started.

August 30, sketches approved and taken up with the contractor.

September 7, actual work started at the site.

Meanwhile there had to be rapid work to keep the architects' working plans ahead of the progress of the work.

November 26, temporary enclosure started and finished in about three weeks.

January 7, visit to the building, the condition of which is shown by the accompanying snapshot; temperature below zero; work progressing with temperature of 52 degrees inside.

May 1, temporary structure removed. Owing to conditions in the lumber market caused by the war, the "Cocoon" was sold at a figure but little below its cost.

June 9, water system and work in general completed.

The layout of the plan was made to meet the owner's personal requirements and also the exposures and character of the site. In designing this house an effort has been made to adapt the farmhouse type which is common in that part of Maine. Most of the old farmhouses are the result of additions made from time to time and this house, in its finished state, suggests an old home which has been extended by many additions to the original structure. The house is entirely of fireproof construction, much of the flooring upon the lower floor being of tile.

A General View of the "Cocoon" Showing Provision for Light in Clerestories

The Most Notable Examples of Architecture of a City —What Are They?

By CHARLES HENRY CHENEY*

WHY is it that the average public discusses so little what is worth while in the existing architecture, landscape architecture or public sculpture of its city? Not enough attention has been given by architects in the past to this important matter of public interest and education regarding the things worth while near home. Practically every city in the country now possesses a few respectable, and sometimes quite notable, examples of American art, but when interested local citizens ask local architects which examples should best be held up to their children for study, they cannot get any satisfactory answer. Local architects are embarrassed by the comparisons with their own work necessary to give a full and honest opinion. Also, two or more local architects can seldom agree on such intimate matters. Hence the layman generally finds his question unanswered, and interest wanes.

It was to meet this difficulty, and in the hope of arousing wide public interest and discussion in architecture, landscape architecture and public sculpture, that the Portland Chapter of the American Institute of Architects in 1919 requested a jury of three out of town architects, the Curator of the Art Museum, and the Professor of Art at the University of Oregon, to name the most notable examples of these three arts existent in Portland, for the benefit of the public. It was not expected that everyone would or should agree with the exact findings of this jury. In fact it was somewhat the object of this determination to provoke intelligent discussion and to bring out honest differences of opinion as much as possible. The important thing was that some list of the things worth while in the city be set up as a standard by which to measure and balance off other examples of art, with which everyone was more or less accustomed from long familiarity.

Standards of comparison are what the average layman lacks. We ought to realize that most men, including a very large percentage of the leading citizens in each city of this country, are very little traveled and have seldom, if at all, given much attention to the arts. Their powers of appreciation and determination are mostly dormant. No standard of what is worth while has been presented to them for attention, study and approval or rejection.

The selections of the jury in Portland caused discussion in the press and for a while at least journals in different parts of the country published some of the good things of the city, such as it had a right to be proud of, instead of the usual admixture of a few good things and a lot more not so good. Interest aroused by the selections in Portland led the Los Angeles Chapter, in the spring of 1920, to carry out a similar experiment, and the selections of a Los Angeles jury are now shown the children of the Los Angeles schools, by their art department, as examples worthy of their study. It is interesting that the Los Angeles jury found no public sculpture in the city as yet that seemed of a high enough standard to be held up to public notice.

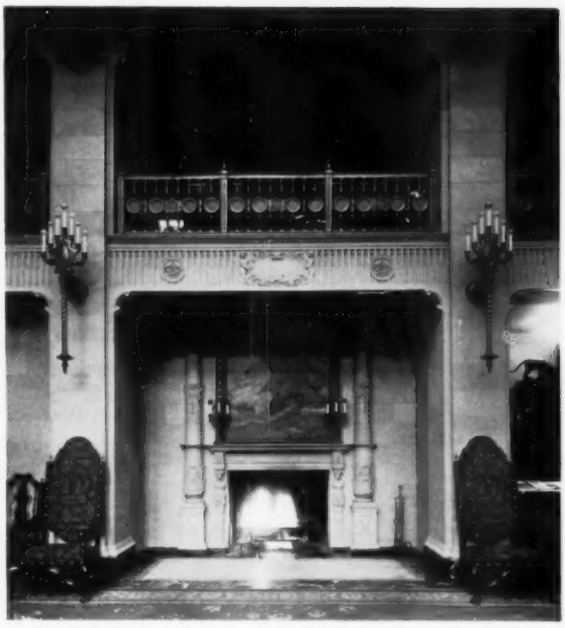
More recently the architects of Spokane, Washington—an inland city of something over 100,000 population—appointed a jury under the auspices of the City Planning Commission, and their selections are published in this issue, together with the jury's report.

In each of these three cities, the newspapers conducted a contest for laymen and school children, who could guess nearest to what the jury would select, with prizes offered by merchants and public spirited citizens. This was a means of arousing the interest of large numbers of people, which however so far has not had as great a success as it should, because of the large

Old National Bank Building, Spokane
D. H. Burnham & Co., Architects

*Member of Juries for selection of most notable examples of architecture, in Portland, Los Angeles and Spokane; member American Institute of Architects and Amer. City Planning Inst.

Davenport Hotel, Spokane



Detail of Lobby, Davenport Hotel

Cutter & Malmgren, Architects

amount of time required in organizing. Other cities in conducting similar jury selections might benefit by the experience of Portland, Los Angeles and Spokane in this regard.

As a member of the jury of selection, named by the architects in each of these three cities, the writer is convinced that the public welcomes such opportunities to get a better understanding of architecture, landscape architecture and sculpture, and evidently has too long suffered from a lack of intelligent direction in the attention which it bestows on these arts. It is sincerely to be hoped that the architects of many cities will take some such authoritative method of arousing greater general interest in their work.

In making such a jury selection, high standards can only be held up where a jury whose judgment they will respect is selected by ballot of local architects, and the members of the jury should preferably be disinterested men from outside, who of course could not pass on any of their own work. Any guessing contest, conducted by newspapers for the public, must be carefully guided to call attention to what the jury will probably select, and not become a matter of popular nomination, else there will be no standards set up.

The report of the Spokane jury is here given:

THE MOST NOTABLE EXAMPLES OF ARCHITECTURE AND LANDSCAPE ARCHITECTURE IN SPOKANE

To the President of the City Planning Commission, Spokane, Washington:

The jury appointed by you, on nomination of the architects of Spokane, for the purpose of selecting, in its opinion, the ten most notable examples of architecture, the three most notable examples of landscape architecture, the two most notable examples of public sculpture, and the five most notable small houses to be found within ten miles of the County Court House, met for two successive days, on October 7 and 8. Together, they visited all sections of Spokane and vicinity and noted with care all buildings, parks, gardens and sculpture that seemed worthy of consideration.

The jury's instructions were that "points of architecture to be considered

Washington Water Power Co. Substation, Spokane

Cutter & Malmgren, Architects

are: usefulness, arrangement, relation of exterior design to interior design, beauty, harmony of detail, setting, purpose, color and appropriateness." The size or cost of a structure did not unduly influence its decisions. It is to be regretted that people generally are often misled on account of mere massiveness or the cost of a building or garden into thinking of it as an important example of design.

There is also a special quality possessed by some buildings and gardens, appealing to both trained architects and laymen—the elusive quality of charm, which is not easily definable, but which might be said to represent the soul of the building. It may embody this quality, even when open to criticism in matters of detail. All kinds and uses of buildings—residential, commercial, industrial, educational, religious, public and semi-public—were compared by the jury to determine which seemed to express the highest development of architecture. The final selections and lists are made up from those found most notable in the opinion of the jury, regardless of size, type or use.

The fact that stood out pre-eminently to the jury in Spokane was that while a few fine buildings were evidently designed and superintended by trained architects, and set a very high standard which is cause for national comment and much local pride, many of the commercial buildings, particularly in the center of the city, seem to have been put up without the help of any competent architects at all, and hence are not only structures of questionable utility but also such as to make a bad impression on visitors to Spokane and on resident public alike.

Hutton Settlement for Orphan Children, Spokane
Whitehouse & Price, Architects

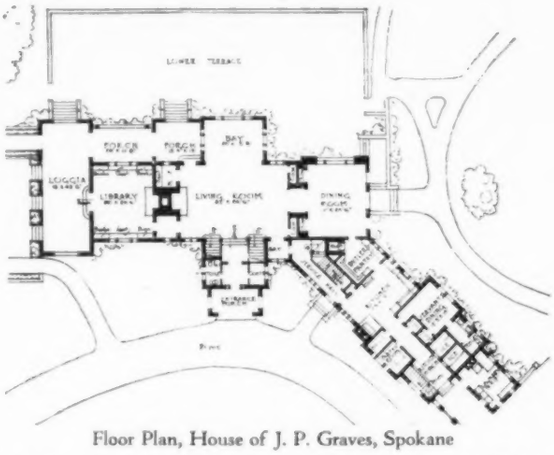
There is undoubtedly much to be proud of in Spokane and many of the buildings, parks and gardens selected by the jury should be notable for their high merit in comparison with the best of any city in the country. It seems to us, however, that the city authorities should find a way to make it more worth while, particularly on the downtown streets, for property owners to put up structures that will make a better appearance. It is not the intelligent property owners, who naturally seek competent help in order to be sure of obtaining a permanent and satisfactory result in their building, who need to be appealed to; rather must we look out for those who have had little opportunity to weigh and understand the value of good design. Whether it be by the remission of a small percentage of taxes to those who will design their buildings on

Lobby of Elks' Club

Elks' Club, Spokane
E. J. Baume, Architect

View of Service and Dining Room Wings, House of J. P. Graves, Esq., Spokane
Kirtland Cutter, Architect

a standard approved by the city, as in Paris, or by some other compensatory method, is not for this jury to suggest, but we believe and recommend that the City Planning Commission and Chamber of Commerce should take up this important matter and find a solution. We feel sure that owners will fall in with the city's suggestions to provide uniformly better design. But the way to get them to do so on any worth-while scale, we believe, is to see that they feel compensated for their effort.



Floor Plan, House of J. P. Graves, Spokane

The jury much regretted not being able to discover any public sculpture in Spokane which is deemed worthy of honorable mention, judged by the high standard set by our foremost sculptors.

ARCHITECTURE

In the unanimous opinion of your jury the ten most notable examples of architecture in Spokane, arranged alphabetically and with their architects, are:

Davenport Hotel, Cutter & Malmgren.

Elks' Club, E. J. Baume.

J. P. Graves residence, Kirtland Cutter.

*Hutton Settlement, Whitehouse & Price.

Monroe Street Bridge, Kirtland Cutter; J. E. Ralston, engineer.

Old National Bank, D. H. Burnham & Co.

R. B. Porter residence, Cutter & Malmgren.

*The Hutton Settlement was fully illustrated and descriptive article published in THE ARCHITECTURAL FORUM, December, 1920.

House of E. A. Lindsley, Esq., Spokane
H. E. Smith, Architect
Awarded Honorable Mention

House of C. A. Weiss, Esq., Spokane
Keith & Whitehouse, Architects
One of the most notable small houses

Washington Water Power Co. Substation, Cutter & Malmgren.

Western Union Life Building, Cutter & Malmgren.

J. R. Wilson residence, Whitehouse & Price.

Landscape Architecture

In the unanimous opinion of the jury, the three most notable examples of landscape architecture in Spokane are, alphabetically arranged:

J. P. Graves grounds, Kirtland Cutter, architect.

Manito Park, Olmstead Bros., landscape architects.

R. B. Porter grounds, Cutter & Malmgren, architects.

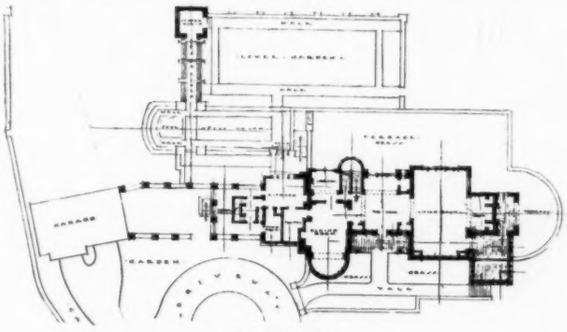
Some of the gardens in Spokane are unusually interesting and well laid out, but undoubtedly the most attractive landscape work in the city has been done for the Park Board. The jury cannot too highly commend the breadth of vision, energy and results obtained by A. L. White, President of the Park Board, who more than 10 years ago secured a comprehensive park and boulevard system plan from America's foremost landscape architects, Olmstead Bros. of Boston, and since that time has secured gifts of more than 32 miles of boulevards.

House of J. R. Wilson, Esq., Spokane
Whitehouse & Price, Architects

Most Notable Small Houses

In the unanimous opinion of the jury, the five small houses which are found to be the most notable of those seen by the jury, alphabetically arranged, are:

Condon residence, Albert Held, architect; R. H. Goodhue residence, Morrison & Stimson, architects; Ernest V. Price residence, Whitehouse & Price, architects; Dr. Charles F. Rigg residence, C. A. Weiss residence, Keith & Whitehouse, architects.



First Floor Plan

General View from Highway

Detail of Entrance Front

House of R. B. Porter, Esq., Spokane
Cutter & Malmgren, Architects

Two Views of Western Union Life Building, Spokane
Cutter & Malmgren, Architects

The jury believes that Spokane is fortunate in being able to present to the world such excellent examples of architecture and landscape architecture as have been selected. Properly displayed and brought to the attention of others, they are bound to provoke favorable impressions and comment. That the most may be made of the city's opportunities, these suggestions are made by the jury:

1. To the Chamber of Commerce—That while this jury knows it is not infallible, and that there may be differences of opinion as to the selections here made, it is unanimous in the recommendation that the Chamber use exclusively in its publicity, reproductions of the buildings or gardens here selected in order to show what a high standard Spokane has developed—one that compares favorably with the best in the country—and not try to substitute other buildings unless selected by a similarly competent and disinterested jury.

2. To the City Council—That the city secure, by lease or otherwise, the property surrounding Spokane Falls, and plant and park it as soon as possible. This would transform one of the greatest potential scenic assets of the city from a condition now unsightly and greatly disappointing to visitors, into one of note to tourists from all parts of the world.

3. To the City Planning Commission—That the Commission persevere in securing for Spokane a zoning ordinance, a major traffic street plan, and civic center plan for the grouping of public buildings, the need and advantage of which are apparent to the most casual student of civic growth.

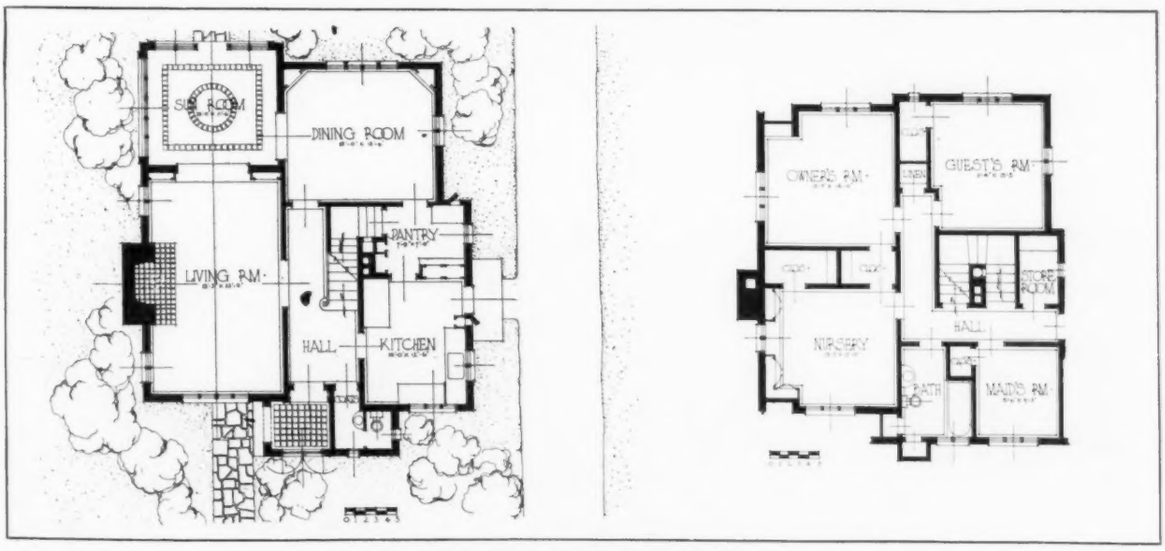
Members of the Jury of Award

Carl F. Gould, A.I.A.
Albert E. Doyle, A.I.A.
Arthur Loveless, A.I.A.
George W. Fuller (Librarian Public Library)
Charles H. Cheney, A.I.A.

Editor's Note.—The jury selected a number of other examples in each division to which honorable mentions were awarded, but they are not illustrated in this necessarily limited review of the judgment.

Monroe Street Bridge, Spokane
Kirtland Cutter, Architect, J. C. Ralston, Engineer

VIEW FROM STREET



FIRST AND SECOND FLOOR PLANS

HOUSE OF E. V. PRICE, ESQ., SPOKANE, WASH.

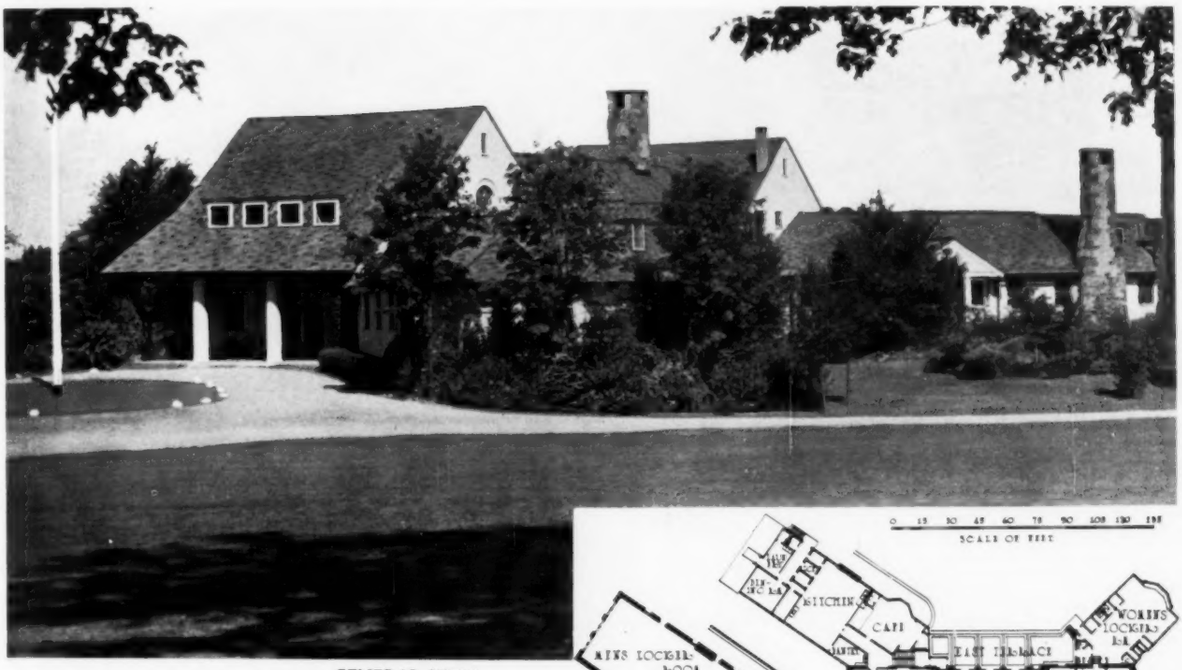
WHITEHOUSE & PRICE, ARCHITECTS

VIEW OF ENTRANCE FRONT

GARDEN SIDE AND ENTRANCE DOORWAY

HOUSE OF K. K. CUTTER, ESQ., SPOKANE, WASH.

K. K. CUTTER, ARCHITECT



GENERAL VIEW

DETAIL OF EAST FRONT

SUNNINGDALE COUNTRY CLUB, SCARSDALE, N. Y.

ROBERT D. KOHN, ARCHITECT

VIEW OF EAST TERRACE

LIVING ROOM

SUNNINGDALE COUNTRY CLUB, SCARSDALE, N. Y.

ROBERT D. KOHN, ARCHITECT

Exterior Concrete

By WALTER W. CLIFFORD
of Clifford & Roeblad, Engineers, Boston

REALLY fine exterior concrete has been produced in recent years. All this excellent work, however, has not entirely overcome the unfortunate impression made by the original concrete blocks with their monotonous rock faces, dreary color, uninteresting texture and usually poor scale.

In the treatment of exterior concrete there are two considerations: outlines and surface treatment. Concrete is a very pliable material as far as mass outlines are concerned. The structural requirements for all concrete buildings, 10 stories high or less, will allow smaller dimensions for columns and spandrels than the architectural designer will wish to use. Ornamental outlines—cornices, belts, etc.—may be of pre-cast units or of cast-in-place concrete. Pre-cast concrete can be had in practically any shape or size in which cut stone is used. By means of glue forms, not ordinarily an economic possibility for field work, fine and undercut detail may be obtained. Sand moulds are commonly used and with them a pleasing texture can be economically obtained. All methods of surface treatment discussed later in this article are applicable to monolithic concrete, and the more elaborate methods are used most advantageously and economically in pre-cast concrete.

Concrete cornices and mouldings are used on all-concrete buildings as a matter of consistency and economy. These are usually cast in place and some very good work of this kind has been done. The scale and general treatment of concrete buildings, as well as practical considerations, make fine details inappropriate. Form work is the variable, so far as the cost of such construction is concerned. The designer must therefore know something of how the forms are to be built in order to satisfactorily combine good design with low cost. Wood forms for mouldings are of two types: narrow, longitudinal lagging on templates cut to the cornice outline as shown in Fig. 1, and solid pieces in combination as shown in Fig. 2.

When lagging is used the face of the form must be dressed, ordinarily by hand, after the lagging is attached to the templates. This is an expensive operation so that lagging forms are employed only when solid forms cannot satisfactorily be used. If the designer is familiar with the requirements of form construction this need seldom happen. The second type of form is usually more substantial and better adapted to the handling which goes with repeated use, as well as being more economical in first cost than lagged forms.

In the construction of solid forms for mouldings there are several things which should be considered. A form joint invariably shows on the concrete surface and it is nearly impossible to completely remove it. Joints should therefore be made at angles where they will be harmless. Joints on curves or tangent points are always objectionable. Reversed curves should be cut from single pieces. If they are too large to be cut from a single piece, resort must be had to a lagged form unless a break can be introduced between the two curves. The fine, closely spaced joint lines of the lagged form will be much less objectionable than a single larger joint at the tangent point.

Forms are, of course, the reverse of the finished concrete surfaces. Wood mouldings of various curvatures and sizes are carried in stock by the larger lumber dealers, and they can often be combined into satisfactory designs which are economical in construction. Special curves are readily obtained, although not so quickly as stock mouldings. Breaks of less than $\frac{7}{8}$ inch cannot be satisfactorily obtained in ordinary concrete work. Breaks can usually be made such that stock dressed lumber can be used. Fig. 2 shows the makeup of the forms and illustrates the points mentioned.

Surface finish of concrete is a large subject and improvements in such finish are constantly being

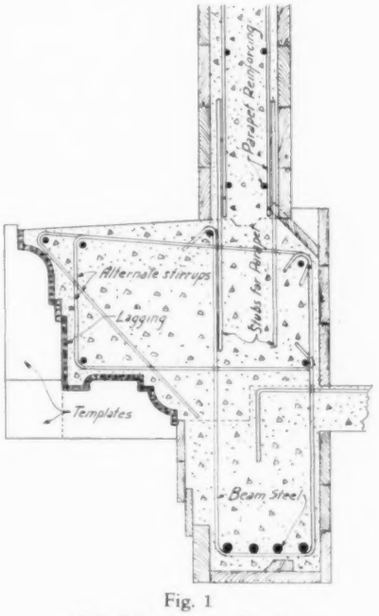


Fig. 1
Wood Lagging on Templates

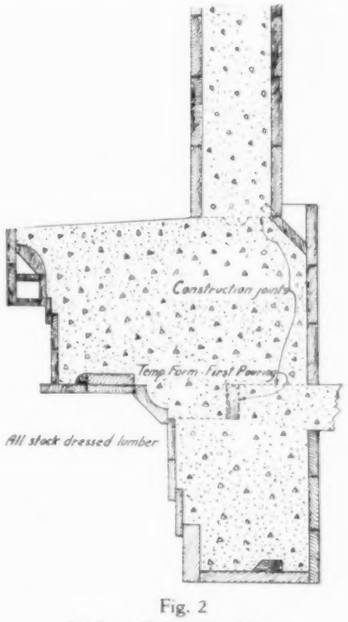


Fig. 2
Built-up Solid Wood Form

Varied Texture and Color in Concrete Blocks and Pre-cast Concrete Trim

made. There are four possibilities in the surface treatment or decoration of concrete: it may be painted; decoration may be added in the form of brick panels or inserted tile patterns; the desired finish may be obtained with the cement, or the aggregate may be selected to give the desired tone and texture and then exposed by any one of the many available methods. Painting concrete is difficult because of the presence of free lime or alkaline material. The porosity of the surface and the probable presence of moisture add to the difficulty. Concrete should therefore be thoroughly dried out before any paint is applied. As a priming coat a solution of zinc sulphate may be applied to neutralize any free lime, or one of the various excellent proprietary paints which are especially prepared to resist alkalinity and fill the pores may be used. It is also necessary to exclude moisture permanently from a wall which is to be painted, as moisture working in behind a coat of paint will cause it to peel. Upon a good lime-resisting primer, which fills the pores, practically any paint may be used which is adapted to the exposure. In practice, the use of painted concrete surfaces is largely limited to interior work.

Surface applications of solutions of metallic salts have been patented and used in Holland for the last three or four years. These are applied with a brush and penetrate an appreciable depth into the concrete. This treatment hardens the surface and renders it more impervious. The coloring is imparted by the solution and already 35 colors have been produced. The solution leaves the colored surfaces dull, but they can be polished to any desired degree by treatment with wax.

The decoration of concrete with clay products is mechanically simple. Brick and terra cotta are fireproof, like concrete, and resist the weather equally well. Exterior brick panels are common and much can be made of burnt clay decoration. The neutral gray of cement in the joints tones with any hue, but if desired the cement can be colored with any of the available pigments. Brick panels are built into recesses left in the concrete. The thinner pieces of burnt clay are usually placed before pouring. For ceilings the tiles may be placed directly on the forms. For vertical surfaces pieces may be glued to paper or canvas or set in the forms with clay. Larger designs may be made in pre-cast units and set in the wall. Some valuable suggestions for "The Decoration of Concrete with Colored Clays," by H. C. Mercer, are contained in Bulletin No. 10 of the Portland Cement Manufacturers' Association.

Since well placed concrete shows a cement surface when the forms are stripped, the simplest surface treatment is a cement finish. In the crudest of work, mostly on surfaces which are not exposed, the concrete is left as it comes from the forms. Concrete surfaces, in practice, usually show some voids which need to be filled, and some "fins" where the form boards or panels join. The simplest real surface treatment consists of chipping off these fins and filling the voids. Wood forms leave grain marks as well as joint marks. To remove these a cement wash is used. A creamy mixture of neat cement and water is applied with a brush and preferably rubbed in with carborundum stone. Simple brush treatment is cheaper than rubbing with stone and is moderately satisfactory if the grout is thoroughly rubbed in and not just painted on. By rubbing the grout in thoroughly with carborundum stone all form marks from good wood forms can be removed, leaving a surface of uniform appearance.

When steel forms are used a very dense, smooth surface results, with "fins" only at the edges of the panels, much farther apart than with wood forms. This "fin" from steel forms is almost indelible as far as ordinary treatment is concerned, and for certain simple work the smooth surface, paneled by form joints, affords an opportunity for surface treatment which has not been extensively improved. Steel forms are carried in stock by several companies, and for economical construction standard size panels should be used as far as possible.

The cement surface was also one of the first points of attack in the problem of decorating or improving concrete surfaces. The dreary gray of the ordinary Portland cement is not pleasing in large areas, and various colorings have been introduced into the mixture. This is attended with many difficulties; cement itself is a pigment which is of a different shade when hydrated. The final color of a concrete surface is therefore dependent on the degree to which the surface cement is hydrated as well as on the foreign pigments introduced. It should also be noted that cements from different

sections of the country, although of the same brand, differ in shade. Specifications for ornamental concrete should require all the cement from the same mill. Pigments for coloring cement are limited to a few mineral colors because of the complex chemical reactions in the setting of the cement as well as the action of the weather. The use of pigment is further limited by the fact that more pigment than 10 per cent of the cement causes weakness.

It can hardly be said that even any of the mineral colors are permanent under severe exposure. In practice, use of cement colorings is largely limited to that of lamp black to darken pavements and some of the iron oxides to impart a slowly fading tint to stucco. White cement is permanent and satisfactory. It requires white sand and stone, however, for really white work.

Exposed aggregate offers the widest opportunity for artistic concrete work. Often, on large surfaces, the aggregates as selected for construction are satisfactory for brushing or tooling. Where a different and more expensive aggregate is desired, a facing mixture is used. It is made from 1 to 4 inches thick and bonded to the concrete backing. Marble, granite and limestone are commonly used as aggregates for ornamental work and offer an almost unlimited variety of colors. Any durable stone of satisfactory color may be used, however, and in most parts of the country some suitable local stone is available. Aggregates for special finishes are usually ¼ to ½ inch in size. The size of the aggregate will control the texture of the surface, which may thus be simply adapted to the scale of different portions of the work without change in aggregate. The tone of the surface can be materially changed for special parts of the work by the addition of a small percentage of aggregate of contrasting color, such as white or yellow marble to give a lighter tint, or black marble, iron slag or blue granite to give a darker shade.

Surface finishing mixtures may be poured at the same time as the backing by the use of a movable dam; they may be plastered onto concrete or other suitable walls (stucco work), or they may be poured 3 to 4 inches thick against the backing wall and bonded with wires left projecting from the earlier pourings. When the surfacing and backing are poured together a sheet metal dam with angles riveted on to keep it at the proper distance from the face is used. This is pulled up as the pouring progresses and the two mixtures thoroughly bonded by tamping. The thickness of surface mixtures placed in this way will be 1 to 2 inches. It should not be less than twice the maximum aggregate size.

All of the given methods of surface treatment are applicable to cast or pre-cast concrete work. Pre-cast concrete is usually made with the face down. The face mixture is placed first and the backing is poured on top of it. More refinement is possible on pre-cast concrete work, but its use of course means the necessity of joints.

Aggregates are exposed in poured concrete by brushing, tooling or polishing. For brushing, the forms must be removed as soon as possible and the brushing done on the green concrete. The harder the concrete the more difficult will be the brushing. The concrete must, however, be allowed to attain sufficient set so that the particles of aggregate will not be disturbed. An ordinary stiff bristled scrubbing brush will answer, but a brush made by clamping together several sheets of wire screen cloth has been found more satisfactory. Water should be applied freely during the brushing. The surface of brushed concrete may be brightened by washing with a solution of commercial muriatic acid diluted with 2 or 3 parts of water. The acid should be thoroughly washed off with clean water. Sand blasting may be used on hardened concrete to give a similar effect to brushing. Tooling may be done with any of the hammers used for natural stone. Tools cannot be used, however, until the concrete is thoroughly hardened. When a hand pick is used a comparatively large amount of concrete is scaled off leaving a coarse textured finish. If the pick is used at right angles no lines or marks are left. By striking a glancing blow, tooth marks are left which may be made parallel or at various angles. Bush hammers give a surface similar to that produced by the pick but with a finer texture. Four- to eight-cut hammers are used with similar results to those obtained on natural stone. Polishing may be done by hand with a stone or by power. The concrete to be polished must be lean enough to

Texture with Exposed Aggregate in Pre-cast Work and Concrete Blocks
Note almost invisible joints in pier

show a large percentage of aggregate when polished, and the aggregate must be one which will take a polish, such as marble or granite.

Certain finishes are particularly applicable to stucco work owing to the fact that the fresh surface is available for treatment. Stippled finish is obtained by patting the freshly troweled mortar with a straw brush. Sand floating is obtained by troweling sand into the fresh mortar with a rotary motion of a wood float. Another sand finish may be obtained by throwing a sand grout against the surface with a brush. The slap dash and pebble dash are similarly obtained by throwing mortar or pebbles into the surface.

In pre-cast concrete work, in addition to the methods mentioned for exposing aggregates, a very light spray of water is sometimes used on fresh surfaces. Much drier concrete is used in pre-cast concrete than is possible for work poured in place, and the forms are removed almost immediately which makes brush or sprayed surfaces somewhat easier to secure than on monolithic work.

In practice, the production of ornamental concrete is similar to that of any other ornamental work in that no specifications can make an expert out of any merely well intentioned contractor. A contractor of experience and skill in the required work must be employed, and an approved sample rather than a description must be used as a measure of the quality of the work.

Some excellent concrete work has recently been done on the entrances to the new Arlington Street Subway Station in Boston, and excerpts from the Boston Transit Commission's specifications follow:

"The work consists of the erection of granite composite walls, with granite base courses and trimmings on three sides of stair openings, . . . with incidental granite composite roofs and vertical walls lining the two sides of the stairways.

"No granite composite work shall be begun until samples of the proposed cut and rubbed work shall have been submitted to and approved by the engineer. Such samples shall be in blocks 2 x 6 to 8 inches square and, after being approved, shall be left at the field office of the department and actual work shall conform with such samples.

"Build in place in carefully made wooden forms granite composite walls and roof around and over top of stairways, as shown on drawings. Form panels where and as indicated. Strap the forms together around the faces of the granite corner posts which are to be set in advance of pouring the composite.

"This composite for eight-cut work shall be a mixture of Portland cement and chips of pink Dedham granite, and of Portland cement and pink Tennessee marble chips for rubbed work. A small admixture of black iron slag in small specks shall be added. Rubbed work shall be used on the side walls of stairs from the top of above described granolithic base up to the under surface of granite belt—all as shown on drawings. These rubbed composite walls shall be 4 inches thick and set against the existing foundation walls, with the inner faces flush with the above described granolithic bases. Before pouring these lining walls, thoroughly rough up and wet down the surfaces of the existing concrete foundation walls. Dowels for this lining work will be set into the existing foundation walls by the department. All the other granite composite work shall be finished in eight-cut work except at external angles. These external angles to be slightly chamfered, as shown on detail, and to have chiseled surfaces, and such chiseling shall be carried around on each face of wall for one-half inch."

The cost of finishing concrete is made up of many variables and for the more elaborate work, where skill is so important, it is not possible to obtain as keen price competition as on simpler work. The cost of coloring cement is largely the cost of the color, which may vary from a fraction of a cent to 10 cents per square foot for a 1-inch thickness according to the pigment used. Measuring out the proper amount of pigment must be done with great precision in order to obtain uniform color; the cost of measuring is insignificant, however.

Brick panels cost only as much per 1,000 bricks as any other face brick veneer. The cost of leaving recesses for brick is that of extra form work—10 to 20 cents per square foot according to the shape and location of the panels and their number. Burnt tile decoration is such special work that estimates must be obtained for each job. Rubbing with cement wash and carborundum stone will vary from 1 cent a square foot for rough work to 3½ cents for the best work.

Placing a 1½-inch veneer, integral with the backing, will cost about 6 cents per square foot for local sand and screenings, but this may be increased very materially by the use of white cement or expensive aggregates. To this must be added the cost of finishing the surface after the removal of the forms. Brushing will cost about 5 cents per square foot, while tooling will vary from 2 cents per square foot for plain picking to 10 cents for fussy hammering. In tooling it is expensive to cut to a line so that small or long narrow panels will cost much more than large plain areas. Polishing will vary from 3 to 10 cents per square foot according to the amount to be done and its location. The various ordinary stucco finishes are not materially different in price. Of course these costs all vary greatly with the time and place, but their relation to each other will generally hold.

While structural concrete work is in its childhood, ornamental concrete work is hardly beyond infancy and, even where appropriations are limited, splendid opportunities are offered for original and artistic results in the treatment of a temporarily plastic material, the color and texture of which can be readily controlled.

BIBLIOGRAPHY. Literature on the general subject of concrete finishing is largely limited to pamphlets of the cement companies and society proceedings, although the subject is treated in a general way in "The Handbook of Building Construction" and "Concrete Engineers' Handbook" by Hool & Johnson. Volume XVI of the Proceedings of the American Concrete Institute contains an excellent article by J. C. Pearson and J. J. Earley on "New Developments in Surface Treated Concrete and Stucco," dealing largely with exposed aggregate finish. Volume XVII of the same Proceedings has a report of committee on treatment of concrete surfaces which gives standard specifications for stucco, and papers on "Coloring Concrete" by John W. Lowell which deal largely with pre-cast concrete, and "Shrinkage of Portland Cement Mortars and Its Importance in Stucco Construction" dealing with one of the practical difficulties in stucco construction.

Technologic Paper No. 70 of the U. S. Bureau of Standards gives detailed results of a winter's exposure on 56 stucco panels varying in compositions and on various bases. "Cast Stone," published by the Atlas Portland Cement Co., gives many examples of artistic cast work; and "Concrete Surfaces," published by the Universal Portland Cement Co., gives valuable suggestions for the treatment of monolithic concrete.

BUSINESS & FINANCE

C. Stanley Taylor, *Associate Editor*

Straight Talks to Architects

V. WHAT IS YOUR METHOD OF CHARGING FOR PROFESSIONAL SERVICE? (CONCLUDED)

IN developing the details of the various methods of charging for professional services, primary consideration must be given to the recommendations of the American Institute of Architects which directly affect this problem. These methods form the basis for service charge systems in many architects' offices today and were developed after a careful analysis of general practice. Members of the Institute are of course familiar with its recommendations. For the benefit of non-members, and to refresh the memory of those who have not recently given consideration to this matter, we present a brief review of the Institute's findings.

In its publication, "The Handbook of Architectural Practice," the Institute sets forth three recommended methods of compensation for architectural service. With these methods is presented a general schedule of charges, including minimum percentages for the various divisions of service. At this point it is important to emphasize the fact that this schedule is not mandatory in its nature. We believe that among architects today, particularly those who are not members of the Institute, there exists a misconception regarding this fact. It is well to realize, therefore, that it has not been the intention of the Institute to set forth any schedule of charges which is mandatory or binding on its members.

The attitude of the Institute is thus clearly set forth in "The Handbook":

"Even as a schedule of charges the document is not of a very precise nature. It indicates that the basic percentage under ordinary circumstances is 6, but that there are many cases in which it is greater. The percentage necessarily varies under different circumstances, since the architect's fee, like that of any professional man, must depend upon his skill, experience and standing and upon the character and location of the work to be done, as well as upon the kind and cost of the services to be rendered. Therefore, to base the architect's fee upon an unvarying percentage of the cost of the work is neither reasonable nor equitable; but since that method has long been and is still largely in use, the Institute names a certain rate lower than which, in ordinary cases, competent and complete services are not to be expected."

The three methods of charging for services as recommended by the Institute are:

1. The payment to the architect of a percentage of the final cost of the work executed from his designs, with the reimbursement of certain expenses.
2. The payment to the architect of a fee for his services and reimbursement of all his expenses.
3. A method by which the architect receives a salary for his work.

In carrying out the first method, an agreement is made with the owner by which the architect shall receive a fee for his services consisting of a basic percentage on the cost of the work, together with a reimbursement for costs of transportation and living incurred by him and his assistants while traveling in discharge of duties connected with the work, and the costs of the services of heating, ventilating, mechanical and electrical engineers with any other extra services to which the owner may agree. This basic fee recommended is 6 per cent on the average project, but it is understood that it may vary according to the amount of work necessary; or, in other words, according to the amount which the architect believes he must receive in order to meet his requirements of cost and profit. It is entirely ethical and not against the mandates of the A. I. A. to charge a fee based on *any* percentage at the architect's discretion.

The recommended method of arranging payment of this fee is:

"Upon completion of the preliminary studies, a sum equal to 20 per cent of the basic rate computed upon a reasonable estimated cost.

"Upon completion of specifications and general working drawings (exclusive of details) a sum sufficient to increase payments on the fee to 60 per cent of the rate or rates of commission arising from this agreement, computed upon a reasonable cost estimated on such completed specifications and drawings, or if bids have been received, then computed upon the lowest bona fide bid or bids.

"From time to time during the execution of work and in proportion to the amount of service rendered by the architect, payments shall be made until the aggregate of all payments made on account of the fee under this Article . . . shall be a sum equal to the rate or rates of commission arising from this agreement, computed upon the final cost of the work.

"Payments to the architect, other than those on his fee, fall due from time to time as his work is done or as costs are incurred.

"No deductions shall be made from the architect's fee on account of penalty, liquidated damages, or other sums withheld from payments to contractors."

The disadvantages of this method are obvious. In many instances the owner is not willing to pay a sum equal to 20 per cent of the basic rate upon the completion of preliminary studies. He may be perfectly willing to pay the actual cost of these studies, together with a reasonable profit which in some instances would approximate 20 per cent and in others would be far less. This is particularly true in case of speculative ventures in projects which require preliminary studies for purposes of

financing. This same objection may hold good in regard to the payment to 60 per cent upon completion of specifications and general working drawings. Another objection to this method of payment is that the architect should have a definite understanding as to the time of payment, so that he will be compensated steadily for the work which he does and will not have too great an investment in the project at any time. This applies particularly to his reimbursement for expenditures.

The second method involves a fee payable to the architect and reimbursement of all costs to him. The amount of this fee should be determined and made part of the agreement between the owner and the architect. The Institute's recommendations on this method of payment are:

"In case of the abandonment or suspension of the work or of any part or parts thereof, the architect is to be paid in proportion to the services rendered on account of it up to the time of its abandonment or suspension, such proportion being 20 per cent upon completion of preliminary sketches and 60 per cent upon completion of working drawings and specifications.

"If the scope of the work or the manner of its execution is materially changed subsequent to the signing of the agreement, the fee shall be adjusted to fit the new conditions.

"If additional personal service of the architect is made necessary by the delinquency or insolvency of either the owner or the contractor, or as a result of damage by fire, he shall be equitably paid by the owner for such extra service.

"The architect shall maintain an efficient and accurate cost-keeping system as to all costs incurred by him in connection with the subject of this agreement, and his accounts, at all reasonable times, shall be open to the inspection of the owner or his author ized representatives."

"The costs referred to in this Article comprise these different items:

(a) The sums paid for drafting, including verification of shop drawings, for specification writing and for supervision of the work.

(b) The sums paid to structural, mechanical, electrical, sanitary or other engineers.

(c) The sums paid for incidental expenses such as costs of transportation or living incurred by the architect or his assistants while traveling in discharge of duties connected with the work, costs of reproducing drawings, printing or mimeographing the specifications, models, telegrams, long distance telephone calls, legal advice, expressage, etc.

(d) A proportion of the general expenses of the architect's office, commonly called "overhead," representing items that cannot be apportioned in detail to this work, such as rent, light, heat, stenographer's services, postage, drafting materials, telephone, accounting, business administration, etc.

"It is agreed that the charge for such general expenses shall be—per cent of item (a) of this Article.

"On or about the first day of each month the architect shall present to the owner a detailed statement of the payment due on account of the fee and the costs and the owner shall pay the architect the amount thereof."

In many ways this is a better type of agreement as it provides for the regular monthly reimbursement of the architect's expenses and the payment of a proportion of his fee. It is, however, difficult for the architect to arrive at the proper fee for this work as it involves his own time and that of principals in his office. Under this type of agreement the architect is more or less subject to the whims of the owner in the matter of conferences, and he may find that the work requires so much of his time that it does not represent adequate payment.

The third method recommended by the Institute is that under which an architect receives a salary for his work and there are no detailed recommendations in this connection, because it is anticipated that "all the expenses of his office are paid by his employer, which is usually a body politic or corporate." It would, of course, be difficult for the A. I. A. to go much further in the standardization of methods of charging. Any mandatory schedule, even though it were detailed according to building types, would be contrary to good judgment.

It is interesting to note that in one form or another the fee which the architect is actually successful in charging depends principally upon public demand and appreciation of his ability. The amount of the fee is usually affected by several conditions, depending somewhat upon the type of building in question. In the case of residential work and the design of monumental structures, substantial fees are paid for architectural merit. In the classes of investment and utility buildings, while good architecture receives a fair amount of consideration, the actuating motive in paying substantial fees is to obtain the service of an architect who has specialized in certain classes of design or who may have the experience and business judgment which recognize practical features that determine the success of the building from a business viewpoint.

As a matter of interest in this connection, we may cite the principal points of two methods of working on a basis of cost-plus professional charges which have been successfully instituted by well known architects. The plan used in the office of Robert D. Kohn, New York, involves the provision of full professional services, including all the usual plans, details, specifications and superintendence for which in compensation the owner pays the direct cost incurred by the architect's office, including principal's time charge, on a salary basis plus 1¼ times the amounts of such cost to cover overhead and profit. It is agreed that the total amount shall not exceed the basic rate calculated under the normal conditions of practice, mentioned in the latest schedule of the American Institute of Architects. Mr. Kohn's experience has been that in some cases the total costs of his services were actually less than under the percentage method, while in other cases the cost has been more than the normal percentage would have been. In other words, the owner has paid fairly for the service he has received and the architect has made a fair profit on each commission. The charge of 1¼ times the cost of the work to cover overhead and profit has been arrived at by adding to the original cost two-thirds of this cost for overhead (a figure developed by studying overhead through a period of previous years), and a profit of one-third of this actual cost plus overhead, which gives a total of about 225 per cent or 1¼ times actual cost for overhead and profit.

In the office of R. Clipston Sturgis, of Boston, a system of cost-plus professional charges is employed which differs somewhat radically from that used by

Mr. Kohn. This system was described in detail in THE ARCHITECTURAL FORUM (then *The Brickbuilder*) in the issue of May, 1913. The same system is still employed in Mr. Sturgis' office and has been in use about 15 years, to the evident satisfaction of all parties. The charge to the owner under this system is developed by doubling the entire cost of drafting, together with the expense of stenographic work on specifications. To this is added the cost of the services of engineers, but this amount is not doubled. Similarly, the cost of incidentals is added but not doubled. No direct charge is made for the time the architect spends in the office or in supervision. The compensation for this is paid in the form of a fee, the amount of which is fixed arbitrarily by the consideration of these three factors:

1. The character of the service.
2. The length of time estimated for completing the service.
3. The proposed expenditure.

By considering the character of the service required, the amount of time which the architect must spend personally is affected by the type of building under consideration. Thus on residential work, where the demand of the owner will be greater than on industrial work, compensation is fixed on a higher basis. The amount of time involved in the preparation of plans and in the carrying out of the project can be fairly well estimated and the agreement usually carries a provision for the suspension of services by the owner if he waits before proceeding with the work. All payments are made on a monthly basis in accordance with the architect's expenditures, and his fee is paid in definite monthly amounts, over the period of the work.

Undoubtedly there is considerable interest in a method of charging for service such as that employed in Mr. Sturgis' office. In the 1913 issue we published in full a text of the agreement which is used. Since that time there have been very few changes in this agreement, but in order that details may be available for reference we again present this agreement with Mr. Sturgis' permission.

ARCHITECT'S AGREEMENT

Agreement made this ——— day of ——— 192–, between ————, hereinafter referred to as the Owner, and R. Clipston Sturgis, hereinafter referred to as the Architect, as follows:

(1) *The Work Contemplated:*

The work for which the Architect is to render professional services under this agreement consists of the planning and construction of ————, estimated by the Architect to cost about ————. This agreement, however, will not be affected by any change in the final actual cost of the building, unless it is due to a substantial increase in the requirements.

(2) *Scope of Professional Service to be Rendered:*

(a) The Architect shall render complete professional services, consisting of such conferences, preliminary studies, working drawings, specifications, large scale and full size detail drawings as may be necessary, together with the supervision of the letting of the work. The charges noted below under "Architect's Salary" are for the personal professional services of the Architect. The expense of draughting, engineers, incidentals and superintendence will be paid by the Owner in addition to such salary, as noted below under "Additional Charges." The Architect will furnish ten typewritten copies of the specifications or copy for the printer, if printed.

(b) The Architect shall in person, or by representatives, give such superintendence to the work during construction as may be required to insure the work being executed in general conformity with the plans and specifications, and such further instructions as may be given from time to time. This superintendence cannot prevent poor workmanship or the use of poor materials, but can require the making good of such defects as appear in the work, so far as practicable.

(3) *Architect's Salary:*

(a) If the work as contemplated at this time is carried on steadily to completion, it is estimated that the Architect's services will terminate in —— months from ———. On this basis the Architect shall receive a total salary of ———. The amount shall be paid as follows: ——— a month for ——— months, payments beginning ——— 192–, final balance of ——— to be paid on issuance of final certificate to the contractor.

(b) If for reasons beyond the control of the Architect, the work is delayed so as to extend over a period materially in excess of that contemplated, as noted above, and so as to entail additional service on his part, then the total amount of the Architect's salary shall be increased by an amount to be mutually agreed upon by the Owner and Architect.

(c) The Owner may at any time abandon or suspend the work and the employment of the Architect shall thereupon terminate if the work is abandoned, and be suspended, if the work is suspended.

(d) If the undertaking is abandoned and the employment of the Architect consequently terminated, he shall be paid in addition to this salary to the date of such termination, the unpaid balance of ——— due at completion.

(e) If the work is suspended at any time so as to suspend also the work of the Architect, the Owner shall be at liberty to suspend payments on the Architect's salary until his work is resumed, without affecting otherwise the terms of this agreement.

(4) *Additional Charges:*

In addition to the Architect's salary determined above, there will be the following items of expense to be paid by the Owner through the Architect:

(a) Draughting: Strict account shall be kept by the Architect of the cost of draughting, such cost to be the total of the salaries paid to draughtsmen engaged on the drawings, or in superintendence, including time so spent in writing specifications, but no charge is to be made for time so spent by the Architect, and all expense of stenographic work on specifications or otherwise, done in the Architect's office, are to be considered as "regular office expense." No charge shall be made for superintendence on the part of the Architect. The total amount of such draughting expense shall be multiplied by two to cover the proportionate share of regular office expenses, and this resulting amount shall be paid monthly on statements in detail from the Architect. The total expense under this item is estimated at ———.

(b) Engineers: The services of structural, domestic and sanitary engineers shall be paid for through the Architect at cost. Expense under this item is estimated as follows:

Structural Engineers, ...
Domestic Engineers, ...
———
Total, ...

(c) Incidentals: Incidental expenses in connection with the work such as blueprinting, traveling expenses, models, long-distance telephone, telegraph, express and other miscellaneous charges directly applicable to this work including printing of specifications, if they be printed, shall be paid at cost on monthly statements from the Architect. Total expense under this item is estimated at ———.

(d) Clerk of the Works: A clerk of the works satisfactory to the Architect shall be employed by the Owner if he deems it desirable, and paid for through the Architect at cost. The clerk of the works shall be the representative of the Owner and of the Architect, and shall report to the Owner through the Architect as directed by him. If a clerk of the works is employed the total expense under this item is estimated at ———.

(5) *Survey Borings and Tests:*

The Owner shall furnish the Architect with a complete and accurate survey of the building site, giving the grades and

lines of streets, pavements and adjoining properties; the rights, restrictions, boundaries and contours of the building site, and full information as to sewer, water, gas and electrical service. The Owner is to pay for test borings or pits and for chemical, mechanical or other tests when required.

(6) *Preliminary Estimates:*

When requested to do so, the Architect will make or procure preliminary estimates on the cost of the work and he will endeavor to keep the actual cost of the work as low as may be consistent with the purpose of the building and with proper workmanship and material, but no such estimate can be regarded as other than an approximation.

(7) *Ownership of Documents:*

Drawings and specifications as instruments of service are the property of the Architect whether the work for which they are made be executed or not.

(8) *Successors and Assignment:*

The Owner and the Architect, each binds himself, his successors, executors, administrators and assigns to the other party to this agreement, and to the successors, executors, administrators and assigns of such other party in respect of all the covenants of this Agreement.

The Architect shall have the right to join with him in the performance of this agreement, any architect or architects with whom he may in good faith enter into partnership relations. In case of the death or disability of one or more partners, the rights and duties of the Architect, if a firm, shall devolve upon the remaining partner or partners or upon such firm as may be established by him or them, and he, they or it, shall be recognized as the "successor" of the Architect, and so on until the service covered by the agreement has been performed. The Owner shall have the same rights, but in his case no limitation as to the vocation of those admitted to partnership is imposed. Except as above neither the Owner nor the Architect shall assign, sublet or transfer his interest in this agreement without the written consent of the other.

(9) *Summary:*

The summary of the items as above is as follows:

(3) Salary
(4) (a) Draughting
(b) Engineers
(c) Incidentals
(d) Clerks of the works

In Witness of the above the parties hereto have duly signed this instrument the ——— day of ———, 192 .

It is quite necessary that we recognize the difference between residential work and practically all other classes of architectural service. Undoubtedly the cost-plus methods of charging for service will find more practical application and more prompt recognition where the details of the architect's contract are being negotiated with business men or business organizations. Residential work involves a high degree of personal interest on the part of the client which at times excludes lengthy consideration of the business details of the average contract for service. It will be found, therefore, that in connection with the design of residences the straight percentage method is often easier for the client to understand.

One factor which enters particularly into this situation is that of the method of letting the construction contract. Under the general conditions existing in the building field, particularly in connection with residential work, many architects have found it advisable to carry out the project under the "several contract method" instead of through a general contractor. This, of course, means considerably more work for the architect who really assumes the executive position of the general contractor. In this situation the cost-plus method provides an ideal arrangement.

If this arrangement is not satisfactory to the client, however, and if he demands some form of straight percentage, the best plan which has yet come to our attention for charges is:

1. That a straight percentage (usually 10 per cent for residential work) shall be charged to cover complete architectural services. This also includes the letting of the contract for principal items, such as masonry or carpentry.

2. On each of the additional separate contracts a special service charge is made by the architect, being a percentage (usually about 10 per cent) on the face value of these separate contracts. This amount serves to cover the additional cost to the architect of obtaining bids, letting the contract and providing more detailed supervision of these portions of the work than is to be expected under the general supervision agreement.

This entire consideration of the question of professional charges would seem to indicate:

1. That the safest and fairest method of charging for services is some form of cost-plus charge, which will render to the owner an accurate accounting of the architect's entire cost, together with a fixed profit and an agreement for payment on a monthly basis. This method makes it possible to order as little or as much work as the client may wish done. It relieves the architect of the necessity of financing work which is in his office and it makes certain for him a reasonable profit on all work which he does.

2. Particular stress is laid on the point of arranging for monthly payment of cost and profit—a requirement against which no sensible client can hold objections.

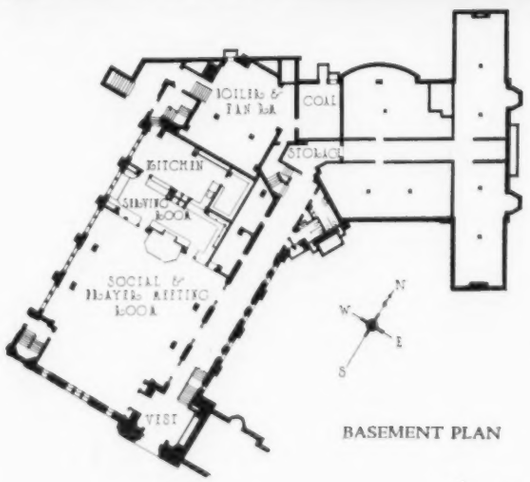
3. The importance of a proper accounting system in the architect's office, not only for the protection of the client under a cost-plus fee arrangement but for the architect's own protection in estimating his costs for the purpose of fixing a lump sum or percentage fee.

4. That it is entirely ethical and just for an architect's compensation to be dependent upon his skill and experience, and that it is impossible to impose standard charges for service regardless of its character.

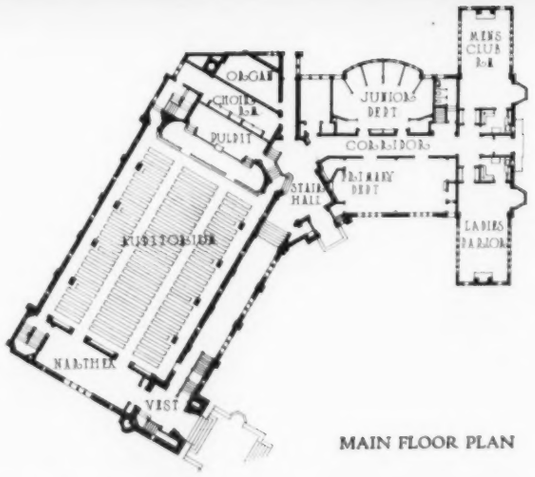
5. That the requirement of the Canon of Ethics of the A. I. A. decrying deliberate price-cutting in professional fees shall be upheld by every architect as sound from both ethical and business viewpoints.

6. That every architectural office should know its own cost of doing business and its own requirements of profit, so that in quoting the cost of service to prospective clients each office may stand upon its own merits and ability. In this manner any variation in the amount of professional fees quoted on a given structure shall not be interpreted as a breach of professional etiquette, even though it may be known that the client has asked another architect for similar information.

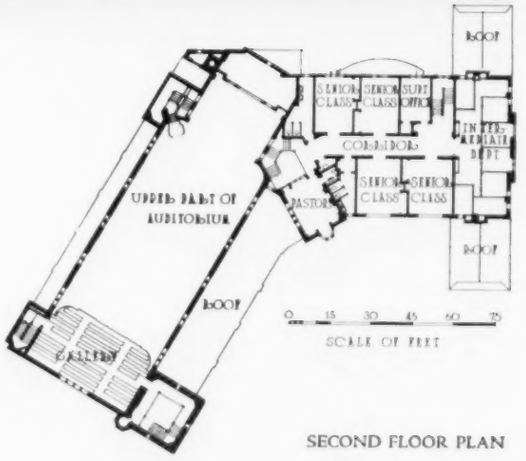
We realize that the last clause of these conclusions may be subjected to much criticism. It is certain, however, that these statements constitute a brief summary of the actual methods used in many of the leading offices of this country; that in no wise does this depart from the methods used in other professions, and that for years the public has been demanding and getting architectural service on this basis. In the selection of architects the building public is becoming more and more discriminating as the ratio of complexity increases in all building operations. The architect who can render better service will receive larger fees. As the young architect develops his ability and experience, he will demand higher rates from his clients. Whether this variation be made by the calculation of percentages or by the establishment of a fixed fee or a salary, the amount which the client will pay primarily depends upon the service which he expects to get.



BASEMENT PLAN



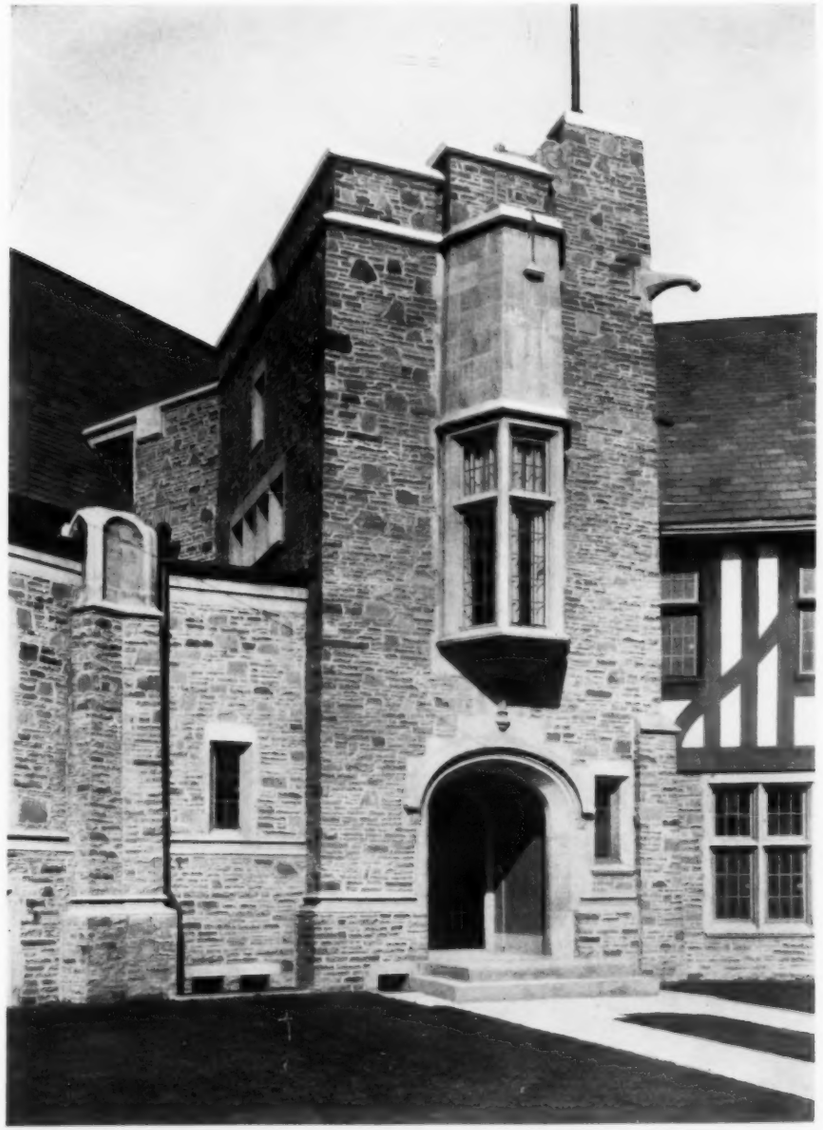
MAIN FLOOR PLAN



SECOND FLOOR PLAN

GRACE METHODIST EPISCOPAL CHURCH, DAYTON, OHIO

SCHENCK & WILLIAMS, ARCHITECTS



MAIN TOWER AND SUNDAY SCHOOL TOWER

GRACE METHODIST EPISCOPAL CHURCH, DAYTON, OHIO

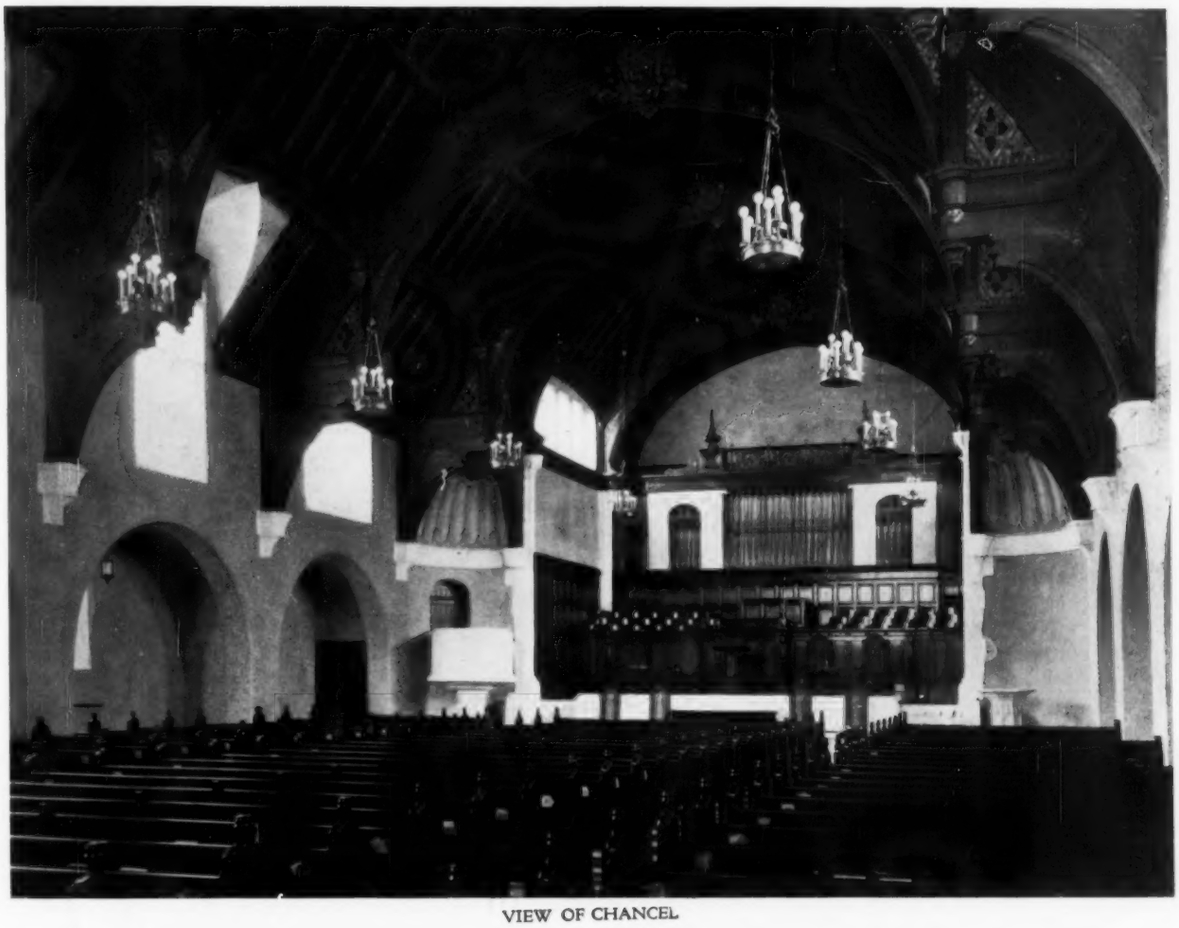
SCHENCK & WILLIAMS, ARCHITECTS

SUNDAY SCHOOL WING FROM THE SOUTH

SUNDAY SCHOOL WING FROM THE NORTHEAST

GRACE METHODIST EPISCOPAL CHURCH, DAYTON, OHIO

SCHENCK & WILLIAMS, ARCHITECTS



VIEW OF CHANCEL

SUNDAY SCHOOL ROOM AND CLOISTER

GRACE METHODIST EPISCOPAL CHURCH, DAYTON, OHIO

SCHENCK & WILLIAMS, ARCHITECTS

The Grace Methodist Episcopal Church, Dayton, Ohio

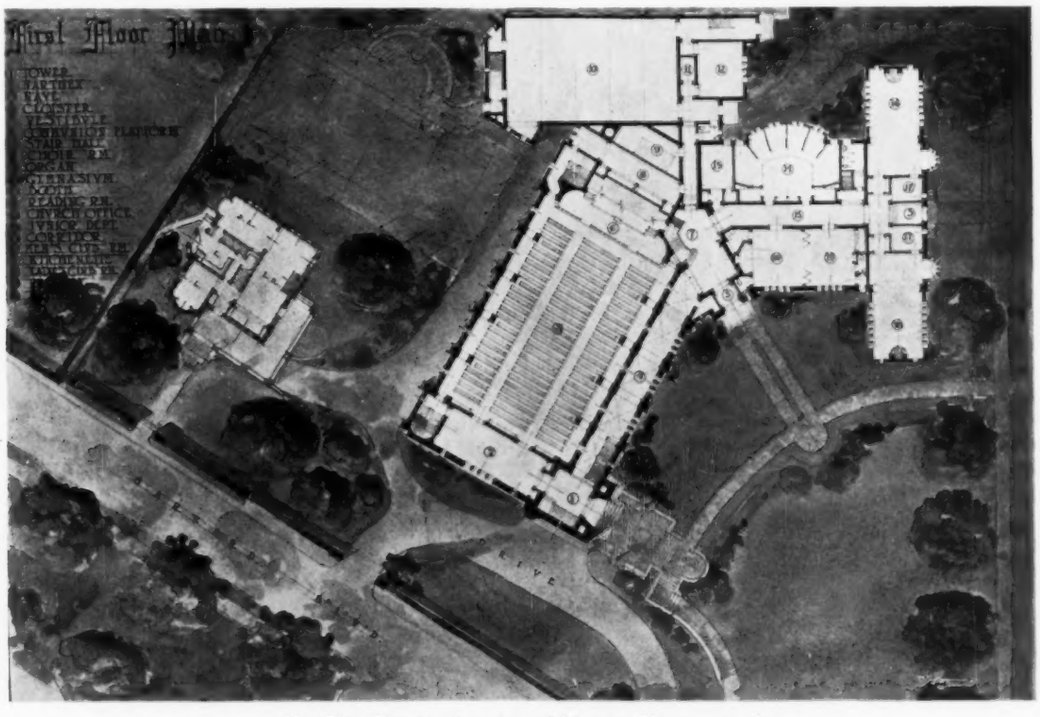
SCHENCK & WILLIAMS, ARCHITECTS

THE Grace Methodist Episcopal Church at Dayton, Ohio, is an interesting example of the modern church group comprising in addition to the usual facilities for devotion, accommodations for community and social activities. The plot plan shown here indicates the varied functions of the group and the manner in which the separate portions are accommodated to an irregular site.

The site itself undoubtedly suggested the scheme of the plan for owing to its unusual size and topography it made possible a building of considerable area with entrances to its different departments placed upon different levels. This segregation of activities has been skilfully worked out, the result being that those portions of the building devoted to purposes which are chiefly social are entered from the large doorway beneath the tower, at the street or sidewalk level while the entrance to the church proper is upon a higher level and reached by a walk with several runs of steps, while the Sunday school rooms with their auxiliary departments are placed in a wing which extends to one side of the main structure, the entire group forming a mass of buildings which possesses a high degree of architectural and ecclesiastical character. The gymnasium shown on the plot plan has not yet been built. The material used for the exterior walls is stone of a thin stratified shale formation obtained from an old quarry near Susquehanna, Pa., while the trimming is of Indiana limestone finely tooled. For the Sunday school wing these materials are used for the walls of the lower story, half timber being used above, and the roofs of the entire group are covered with slate of variegated color and graded sizes which harmonizes well with the stone of the walls.

The floor plans show that unusually complete equipment has been provided for a church of many activities. The various departments have been so planned that each is complete within itself without interfering in any way with the others. The nave or main auditorium is arranged to seat 1,000 people and the timbers of its open roof are carved and polychromed, while the aisles are floored with specially made tile. The pulpit may be seen from every seat in the church and the choir and organ have been placed in what is the position usually favored in evangelical churches — behind and above the pulpit or reading desk.

In the wing devoted to the use of the Sunday school there is every provision made for success in teaching. Different grades are provided with their own rooms, that for the intermediate department being subdivided into smaller rooms for individual classes. An office for the superintendent is provided, and the Sunday school wing has its own entrance from the street at the side of the property.



Plot Plan Showing Location of Various Elements in the Church Group to Fit Topographical and Street Conditions

EDITORIAL COMMENT

DEFINITE ENCOURAGEMENT OF THE CRAFTS

A MONTH ago we commented upon the very evident shortage of skilled mechanics in many of the building crafts, despite the unemployment conditions which are so generally existent. It is a condition that holds no great promise for lower building costs and, what is of equal moment, it points to the further deterioration of craftsmanship with its depressing effect upon architecture. This condition has come about on the one hand because of the selfish class interests of the labor unions in restricting apprentices and membership in the union and making the latter requirement obligatory for the man who wants work in the trades, and on the other hand by modern business demands that make it unprofitable for the master of a shop to give the time to train a young man to a trade.

Recently *The New York Times*, in an editorial on the industrial arts, noted that the shortage of mechanics is not a difficulty in the building trades alone; it exists in practically every industry where success depends upon good design and expert craftsmanship. It quotes a recent survey of the silver industry, made under the auspices of the National Society for Vocational Education, which revealed the fact that practically no silversmiths are being trained in this country except as they may pick up knowledge through experience in the shops. As one manufacturer expressed it, "Unless some way is found to train expert workers in silver, the industry will die out in this country within ten years."

Those attempts at education we have made are confined almost entirely to design schools; even they are of no high order and their graduates exert but little effect in the various industries. In this whole country there are but two important industrial art schools and no museum lending objects of merit to industrial studios that are removed from metropolitan centers.

How can we advance the arts in this country with such meager prospects for a capable body of craftsmen? It is useless to train designers if we lack craftsmen with the ability to execute designs. Contrast this condition with what we find in Europe. Before the war France had 32 industrial art schools, fed from over 200 schools of design; in England there were 37 industrial art schools, and the South Kensington Museum supplied traveling exhibits to some 350 art schools and to country museums, while Germany was credited with 59 industrial art schools, all comparatively new and well equipped. In our larger cities it is the men who come here with European training who are doing the craft work that architects demand and must have if their designs are to be carried out as they conceive them. Are many men of American training known to be expert ironworkers, decorative painters, stone carvers, workers in ceramics or any of the other countless crafts that contribute to the glory of architecture? Furthermore, ask the architects in the larger cities what their experience with the crafts is. They find some European lately come to the United States with his traditions for good workmanship; he comes to the office and eagerly enters into the work in hand and produces something that gives joy and encouragement to the architect. The second commission produces results perhaps as good as the first, but on the third occasion the craftsman is not seen; he is represented by a salesman; he has built up a shop; union principles have been forced on him; he has to struggle against dollars and cents — the product is the inevitable result, and the architect must look for a new and unsophisticated craftsman.

We are, therefore, not only *not* creating or training craftsmen, but because of short sighted and erroneous principles that hold sway in American industry we are actually destroying those who come to us from abroad. Who or what is going to stop this? Business will not bother with the problem until it becomes acute and it is forced to do so in the interests of commercial prosperity. In business the problems of the next generation are of little concern to the present. Architects cannot very well establish training schools in the many centers that need them. It is a matter of public responsibility and facilities should be provided for the training of mechanics and artisans in state or municipal schools, the cost of instruction to be largely met by tuition fees, just as we now furnish academic and technical education in our state universities. Architects can do their part in advocating such measures; they can point out to both commercial and educational sources the great necessity for practical training of this kind, and they can give encouragement and patronage to such craftsmen as now exist. A recent step that has been taken to find out some of the details of the problem is a series of conferences held by the Committee on Education of the Chamber of Commerce of the State of New York with representatives of various industries in which art is a factor. Such movements should have the approval and support of architects, and we suggest that all architects interested place at the disposal of the Committee their experiences and recommendations with regard to the crafts. The Committee's address is 65 Liberty street, New York.

DECORATION *and* FURNITURE

A DEPARTMENT
DEVOTED TO THE VARIED
PROFESSIONAL & DESIGN INTERESTS
WITH SPECIAL REFERENCE TO
AVAILABLE MATERIALS

It will be the purpose in this Department to illustrate, as far as practicable, modern interiors furnished with articles obtainable in the markets, and the Editors will be pleased to advise interested readers the sources from which such material may be obtained

DETAIL OF DOORWAY IN LIVING ROOM, HOUSE OF CHARLES H. SABIN, LONG ISLAND, N. Y.

CROSS & CROSS, ARCHITECTS

An interior Georgian doorway illustrating breadth and dignity of the style. Typical enriched classic mouldings, wall panels formed with applied mouldings; woodwork painted greenish gray and gold. Ceiling height, 17 feet

78

English Georgian Decorative Precedent

I. THE EARLY GEORGIAN DOMESTIC INTERIOR, 1720–1760

By STANWOOD MACOMBER

TO the student of domestic interior architecture the period of the English renaissance presents an era of the greatest richness and variety that has undeniably more immediate application to present day conditions and tastes than any other of the great historic styles. This period produced some great architects, some of whom displayed marked originality, and with the varied continental influences that came through the affiliations of royal and political life, the course of development does not run so smoothly as in France or Italy. Personalities and fashion exerted first a strong Italian tendency, then a Dutch, later French and finally that culminating in a full classic revival based on the arts of Italy. All of these phases of style were tempered by sober English tradition and the transition from one to another was so gradual that analysis of the period requires discrimination of the nicest order.

Georgian is a term that has been loosely applied to much work of the English renaissance, although in the interests of accuracy a good deal of so-called Georgian work is definitely connected with an earlier regime. In architecture there are clearly defined characteristics that limit the period; in decoration and furniture, however, the first half of the eighteenth century was largely a transitional period in which nothing distinctly original was created; the work of the time reflects rather the refinement and elaboration of forms developed previously. The great houses of the nobility, it is true, show a development in decoration paralleling the "grand manner" of Louis XIV and based on the palaces of Italy, but this was purely a result of fashion which was not typical of England generally and was recognized even in its own day as a hollow striving for show and pomp that was fundamentally foreign to the English temperament and taste.

The "grand tour" was the necessary finish to the education of the English gentleman of the period. Patronage of the arts and the formation of collections were worthy pursuits in those days of peace and this spirit provided the fertile soil for a wonderful architectural development. Probably at no other time in the history of the world was a wider knowledge of architecture possessed by the educated layman. Palladio was accepted as the fount of all knowledge and his principles of architecture were held in such high favor by both architects and the cultivated amateurs that even the work of the

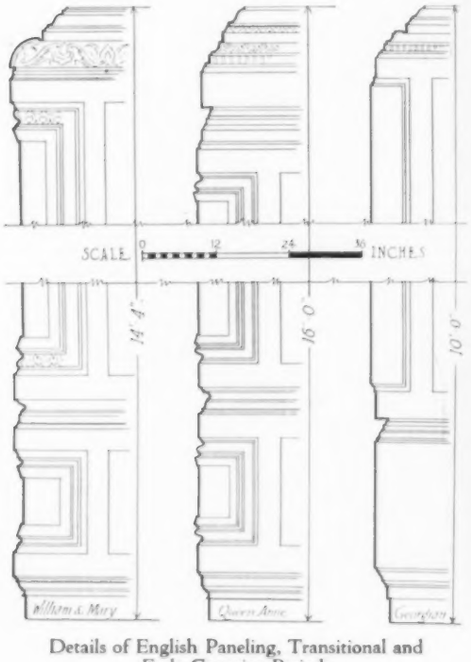
Interior of Porch of House on Long Island, N. Y.
Howard Major, Architect
A transitional room illustrating relation between Italian and Georgian styles

A Mid-17th Century English Mantel Showing Influence of Inigo Jones

great Wren was depreciated because it did not conform to the Palladian doctrine.

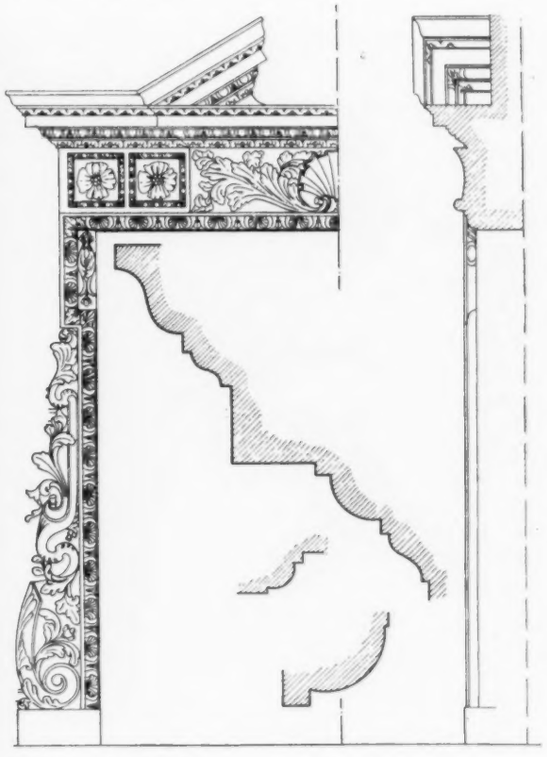
Wide publication of drawings and photographs of the great houses of this period has given rise to the opinion that they reflect the prevailing early Georgian taste. They really constitute but a phase, and the homes of the simpler people contemporary with them afford a truer picture of the times and likewise a precedent for modern architecture and decoration of particular merit. We should consider rather the simpler form of the Georgian town or country house and particularly the manor house or the home of the country squire, the prosperous commoner or the minor nobility. Houses of these types are full of rich suggestion. It would be difficult to find in any country a type of home more livable and beautiful than the plain, red brick house with wooden cornice and sash windows which was built in England during the entire eighteenth century. Probably it was not the work of an architect at all, but was designed and built by some country builder who had inherited his craft from his father before him. Much of the interesting work in England is not from the designs of great architects, but is the unpretending effort of the architect unknown. These smaller houses continued to express the fondness of the preceding generation for the Dutch influence, as far as it affected the arrangement of rooms, their relative sizes and grouping of windows. In the detail and design of the interiors, however, Palladian principles were followed and it is this peculiar Anglicizing of the Italian style that produced the distinctive Georgian work, the charm of which remains as great today as when first achieved.

The outstanding characteristic of the Georgian interior, and that of earlier styles as well, is wood paneling. This was developed from a practical



Details of English Paneling, Transitional and Early Georgian Periods

Modern Wood Carved Mantel in Georgian Style
Charles I. Berg, Architect



Details of Early Georgian Mantel Designed by Colin Campbell

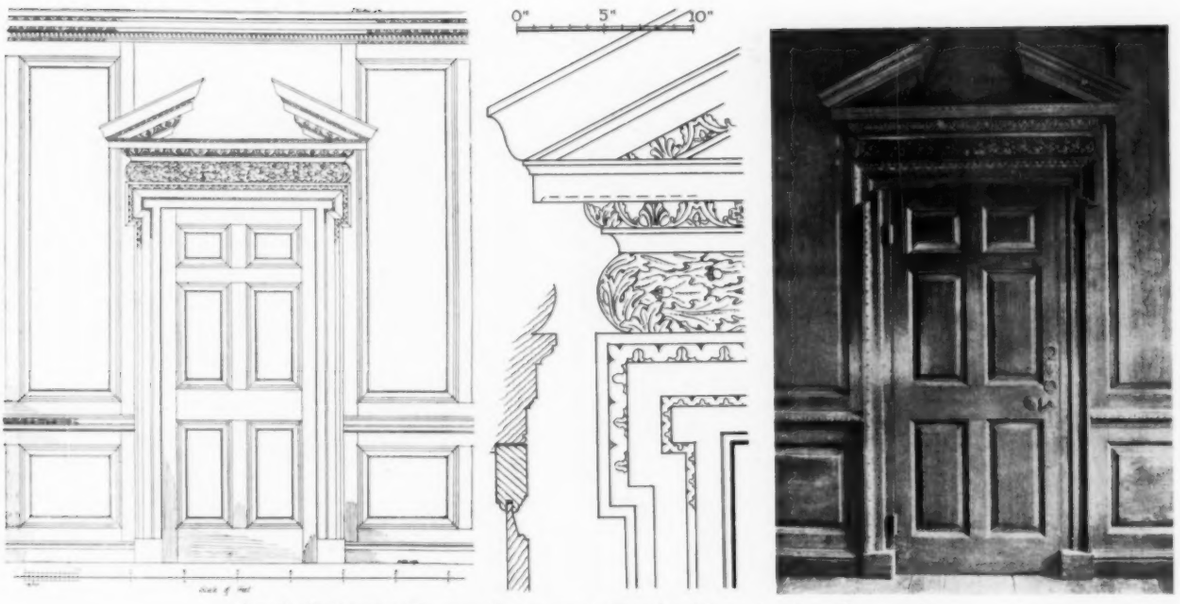
Scale of reproduction, ¾ in. = 1 ft. *From the "Practical Exemplar"*

necessity which required the lining of walls to retain heat, and there is no other detail through which the changes from one style to another can be better traced. Large wall panels had become popular during the time of William and Mary and Queen Anne and in their detail they showed strong Dutch influence. In the Georgian period there is a distinct reversion to classic detail. The fields of the panels remain large and while their edges were beveled and the centers raised, as in earlier work, the panels themselves were set back of the face of the framing and the panel mouldings made more delicate and placed flush with the rails. The mouldings followed classic contours and when ornamented such classic motifs as the egg and dart and the Greek fret were used. The principles of the classic orders were followed in proportioning the vertical divisions of the wall; thus the dado corresponded to the pedestal of the column, the long vertical panel to the shaft and the frieze and cornice to the capital.

The interiors just preceding this period, which were largely influenced by Wren, showed frequent use of pilasters of the Corinthian order. These were quite generally omitted in the Georgian rooms, however, and a development of the paneling was adopted in their stead. Where pilasters would have been used in the earlier work the Georgian architects used a narrow panel with a very simple moulding and frequently this panel was not beveled and raised as the others. The wall spaces between these pilaster panels were then framed in large panels divided into one or more divisions in proportion with the wall spaces and occasionally the mouldings framing them were raised and decorated to give the necessary accent.

The typical Georgian dado was not broken into panels to conform with the divisions of the upper wall but was made up of plain woodwork with a simple moulded base and cap. The cornice of the room was generally of wood and followed classic proportions and detail, a typical Georgian feature being the cushion frieze. The moulded members were usually enriched with running ornament, and carved modillions were commonly used. A full entablature was used in the larger rooms, but in more instances the freize and architrave were omitted.

The fireplace continued, as in former styles, to be the dominating feature of the interior. In the early Georgian work it is nearly always worked out with an over-mantel treatment, and much beauty of proportion and dignity in carving are evident in the wide variety of types developed. The fireplace facing and the mantel itself were frequently of marble and toward the middle of the century often showed a decorative combination of marbles of different colors. The most popular form for either wood or marble was composed of a moulded architrave around the fireplace opening, surmounted by a carved frieze and cornice supported by elaborately carved trusses or sculptured terminal figures. A rectangular panel with sculptured bas-relief was sometimes introduced in the center of the frieze with swags of oak leaves or drapery on either side. The over-mantel was generally a carved decorative framing for a portrait or other painting, the framing



Details of Georgian Doorway from Room in Bourdon House, London, Shown Below

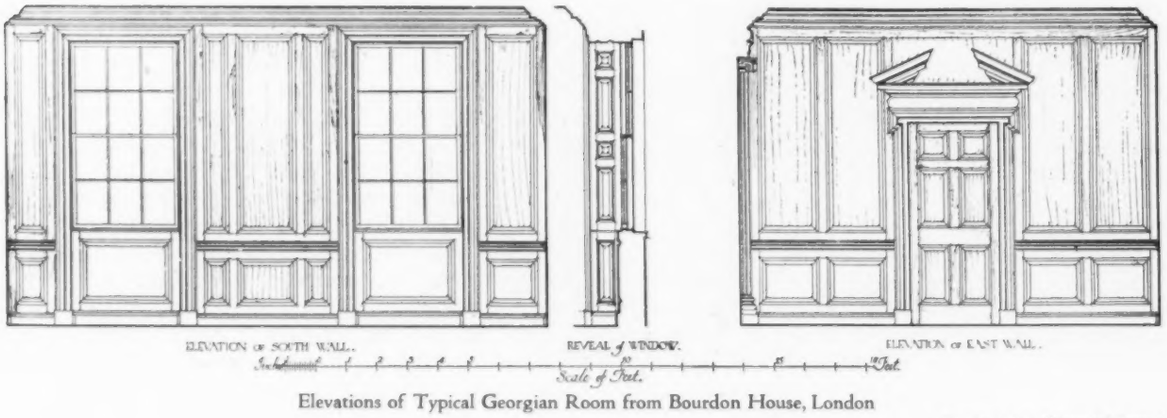
at the sides generally taking the form of a carved ramp or volute and the top was completed with an ornamented frieze and a broken or complete pediment. Occasionally these mantels were combined with pilasters to form a large motif, but in most cases a simpler character prevailed and they were made up of two elements, the upper and lower parts, which were related by similar ornament and uniform scale, but on the whole the early Georgian chimney-piece gives the effect of a super-imposed over-mantel of a decorative character without any structural significance.

The mantelpiece as developed in England differs widely from that of any other country and its form through the entire renaissance period is due solely to Inigo Jones, the father of the Italian phase of architecture in England. As shown by the illustration on page 80, which is of the period of Jones though not necessarily known to be his design, there were bequeathed to the architects of a hundred years later dignity and beauty of proportion that would be difficult to exceed.

The doorways of the Georgian room likewise received attention although in the main their treatment was a simple one. The typical doorway shows a moulded architrave surmounted by a frieze and pediment. The frieze was frequently round and decorated with the classic oak leaf and band ornament and the pediment shows plainly classic influence. The doors themselves were of broad proportions and framed with six or eight panels, beveled and raised, and outlined with simple flush mouldings. Door heights were as a rule kept comparatively low.

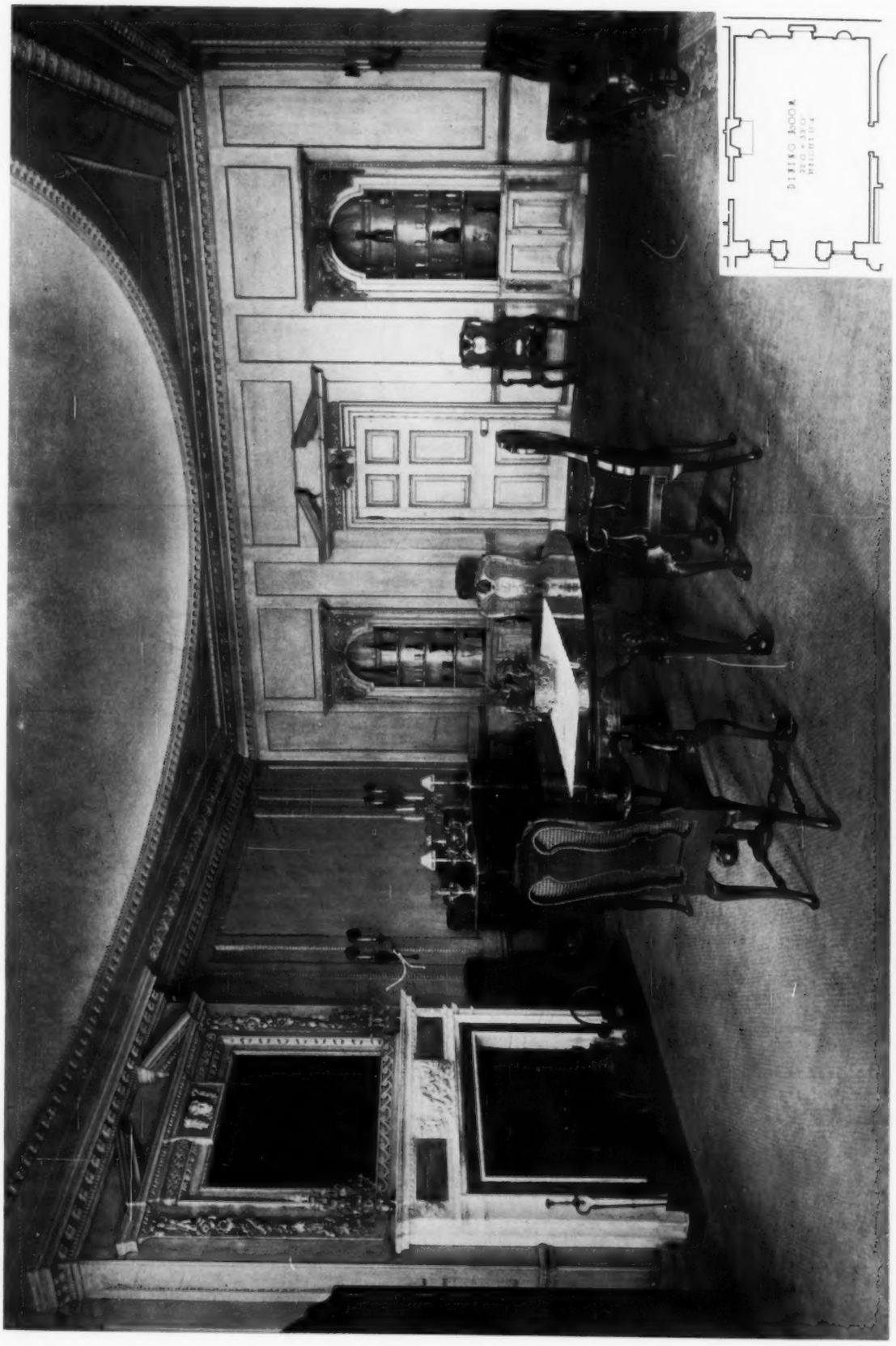
Windows were large in area and the sash divided into small panes with heavy muntins; the tops of the windows were kept well up toward the ceiling and they were generally placed toward the outer face of the wall following Italian custom and permitting a deep reveal on the interior which was paneled.

The period immediately preceding the Georgian was characterized by the use of oak, and with the enriched carved mouldings to give decorative interest the wood was frequently left in a natural state without finish of any kind. With the advent of the large panels and simple mouldings of the



Elevations of Typical Georgian Room from Bourdon House, London

Reproduced from "Practical Exemplar"



DINING ROOM, HOUSE OF CHARLES M. MacNEILL, ESQ., NEW YORK

FREDERICK J. STERNER, ARCHITECT

An early Georgian room with original paneling of 1710 and mantel and over-mantel painting from an old London house. Wood is pine in natural finish and furniture early Georgian with Queen Anne influence

LIVING ROOM, HOUSE OF CHARLES H. SABIN, ESQ., LONG ISLAND, NEW YORK

CROSS & CROSS, ARCHITECTS

An early Georgian type of room with effect of dignity and spaciousness. Walls painted in greenish gray and hangings of reddish tone. Furniture of eighteenth century English type from Queen Anne walnut to Hepplewhite satinwood

SITTING ROOM, COLONY CLUB, NEW YORK
DELANO & ALDRICH, ARCHITECTS
Original Georgian room of about 1750. Walls painted light apple green, ornament gilt. Dimensions, 18 ft. by 22 ft., height 10 ft.

LIVING ROOM IN HOUSE AT WATERBURY, CONN.
MURPHY & DANA, ARCHITECTS
A modern version of Georgian with walls paneled in birch and stained only enough to equalize natural variations in tone. Dimensions of the room are 30 ft. by 18 ft. and 9 ft. 6 ins. high

Georgian period, pine and fir came to be the popular woods and the walls were now painted. White paint was used in the earlier work probably to give the appearance of the plaster and stone halls of Italy, but it was far from universal; various shades of green largely prevailed and blue and brown were also used to some extent and the classic detail on the mouldings was frequently enriched with gilt. The early Georgian rooms were full and rich in color which gave them a much more comfortable appearance than some of our present day rooms in their timid white and cream coloring.

The dignity that was imparted to these rooms by classic paneling and architectural detail was further enhanced by the decorative treatment of ceilings. They were of plaster and carried out the traditions for craftsmanship that had been so evident in English plaster work for centuries. From the standpoint of composition they were made up of simple, large scaled, geometrical divisions with the central motif elliptical or circular. Ornament was confined to the ribs of the design and followed the crisp, deeply cut, conventionalized, natural ornament developed by Wren. The transition from wall to ceiling was occasionally made with a plaster cove.

The early Georgian designers and craftsmen could not forget entirely the character of the earlier Queen Anne rooms and we frequently see cropping out motifs such as a carved pendant or swag after the manner of Grinling Gibbons or a gracefully carved moulding of William and Mary times. The pine with which the Georgian rooms were largely built offered a tempting medium for carving and the comparatively small amounts that appear now and then are a decided asset in softening the tendency to rigid classicism. The spandrels over a curved doorhead or over a niche cupboard were often ornamented with this type of decoration, the detail of which was composed of leaf forms and scrolls recalling the ornament of the restoration.

These, then, are the chief characteristics of the style, and their handling by modern architects produces rooms of such varying effects as the formal drawing room in the Sabin residence and the charming pine dining room in the MacNeill residence which are shown in the accompanying plates. Present day customs of building and the individuality of designers are effecting changes which though they depart from the original in the letter, certainly sacrifice none of its spirit. Thus it is not always feasible because of limited appropriations or difficulty in obtaining seasoned wood to have walls entirely of wood paneling; a similar decorative effect can be secured by simple wood mouldings applied in panel form to plaster surfaces. If the general scale is right, proportions similar to the originals and care exercised in the sizes and detail of mouldings, the spirit of the style will be preserved.

Dining Room, House at Mt. Kisco, N. Y.
Trowbridge & Livingston, Architects
A modern room essentially early Georgian in character but with details inspired from later 18th century work. Dimensions, 22 ft. by 36 ft.